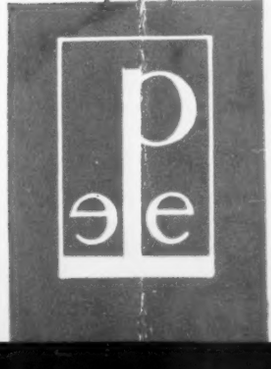
PRINTING EQUIPMENT ENGINEER



Edited for those concerned with the use and care of Printing Equipment

SEPTEMBER
1931

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(Pat. Applied for)

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PRINTING EQUIPMENT ENGINEER

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*The Black and White Contrast Matrix was officially endorsed by the International Typographical Union at the Seattle convention in 1929 (see Book of Laws, page 109).

PRINTING
EQUIPMENT
ENGINEER

September, 1931

Ink Drying to Prevent Offset

By M. E. HANSON*

IN THE printing industry we have experienced many changes, but one now greatly to be desired is the prevention of offset by drying the ink as rapidly as it is printed to get away from the use of slip sheets, offset paper rolls, wax sprays and the like.

Recently much experimenting has been going on and the results are encouraging. Various aids to drying ink rapidly are gradually being determined and one method by which it may be accomplished has taken definite shape.

This paper will discuss the pertinent features of the problem in the light of most recent scientific development, covering the following:

I. Kinds of drying reactions.
II. Physiochemical nature of the elements as aids to drying, such as heat, light, dryers or siccatives, ozone, etc.
III. Nature of inks for quick drying.
IV. The art in applying the aids to drying.
V. Two outstanding trials.
VI. Limitations imposed by present press design.
VII. Newspaper press possibilities.

I

There are three common kinds of drying reactions. The simplest is the one where water or a commercial solvent is evaporated or extracted, leaving solids remaining simply minus the water or solvent. Energy in the form of heat, centrifugal force, or squeezing must be applied or no change of state will take place. The other two are drying by oxidation and by polymerization. Oxidation in reference to inks is the addition by absorption of oxygen by an unsaturated hydrocarbon. Polymerization is the rearrangement or redistribution of molecules already present without the addition of others to cause a complete change of state. Both reactions require the application of energy in some form to make them take place. Owing to the complex nature of linseed oil, tung oil or any drying oil, both the latter forms of drying take place, but drying by absorption of oxygen is greatly in predominance with the commercial oils as they are now most readily obtainable. By processing the oils further the balance may be thrown more the other way so that drying may be made to take place principally by polymerization. Oxidation has some disadvantages; it is difficult to cause the rapid absorption of oxygen without drying the outer surface first, called case hardening, thus preventing the further absorption by the under layers only at a slow rate. Case hardening causes loss of brilliance. Polymerization on the other hand presents some advantages. Case hardening does not so readily take place. Energy may be applied to a sticky film for a time without any seeming change of state or appearance, and then after enough energy has been absorbed hardening suddenly takes place all through the mass uniformly. Furthermore, much less energy is required, for some has been supplied while processing the oil. A consequent saving in time is derived from the same effect. Unfortunately we have not yet found a perfected way to carry on this processing to get pure polymerization in a manner so that a rapid drying varnish will dry slowly enough at room temperature to not stick on the inking rollers in a reasonable time and still be rapid enough at an advanced temperature after printing. Care also has to be taken in processing so as not to produce an ink that will "jell" in a few hours or even days in storage, producing an effect as if too much metallic dryer had been added. One varnish vehicle for ink making has been developed along this line which gives some remarkable results, and tests are now being conducted to develop the proper sources of energy which give promise to convert it to a hard film in a very few seconds. This ink, however, must be dried by a combination of oxygen absorption and polymerization.

II

Heat as an aid to drying is the most common source of energy either as convected heat as in a blast of air, or as conducted heat by contact with a hot plate, roll or bar, or as radiant heat transmitted in light waves. Convected heat figured in B. T. U. cannot be supplied fast enough or started and stopped quickly enough to be considered. Heat by contact can be supplied at a rapid enough rate and will serve well in some places, but rolls or bars heat up slowly and cool down so slowly that injury has been done a web or sheet remaining in contact with this source after the press is stopped. Radiant heat gives the best promise, it is fast and no part touches the web or paper. One manufacturer has devised an electric light heater, a sort of lamp which may be heated up very quickly and the greater part of the heat intensity killed instantly by

*Mechanical and Chemical Engineer, Collingwood, N. J. Member American Society Mechanical Engineers.

merely turning on and off the electric current by a simple device connected to the press starting switch. It fits into the small space available on most presses more adequately.

Light is another source of drying energy. The effect of long and short wave lengths have been studied. Short waves such as emanate from an ultra-violet lamp have a decided drying effect. They seem to have the most strength of any exerting their actinic effect throughout the depth of the film. Ultra-violet lamps give out little heat, however, and of themselves without heat and other aids are far from sufficient. Furthermore, the lamps are too expensive to cover a sufficient area of web, have to be mechanically started by tilting, are limited as to position, after being lighted require some time to develop ultra-violet emanation, and progressively deteriorate during the life of the lamp.

The electric light heater above referred to gives out (infra-red) long light waves varying between 7000 angstroms and 8000 angstroms probably. Long light waves dry the surface of a film as well as ultra-violet, though do not have the penetration, but the heat penetrates to the under layers and acts on siccatives. If the siccative or catalyst is properly selected and prepared for the drying oil used and the heat rises to 150° to 200° F., drying will take place far more rapidly than with the ultra-violet alone. Energy of this nature seems to promote the catalytic action of a siccative more than does ultra-violet light. Tests showed no advantage at all could be derived by adding the rays from a quartz-tube ultra-violet lamp to the heat-light from the long-wave lamp.

The hot cathode ray from the Coolidge tube will alone dry a pure oil film in a very short time measurable in seconds. Unquestionably some day the tube will be in ordinary industrial use, but now it is too much a scientific instrument.

Ozone of itself is the greatest individual aid to drying. It is a certain source of energy and a source of supply for oxygen in its most available form for the absorption part of the process of drying. It apparently is an aid to polymerization also, just to what extent is not clear.

Ozone is made from oxygen or dry air. With the same electrical input the highest concentrations are obtained from oxygen. Air is made up chiefly of a mechanical mixture of oxygen, nitrogen and water vapor with oxygen greatly in predominance. In an ozone generator dry air or oxygen is forced through a space under the corona effect of a high electromotive force or strong magnetic tension. Thus the constituents are highly ionized. When dry oxygen in the air or from the ordinary steel container is allowed to expand through an ozone generator the nature of some of the molecules is so changed as to be made up of three atoms instead of two as the molecule of oxygen exists in the natural state. A molecule of ozone consisting of three atoms is very unstable and remains in existence as such only as long as it holds its highly ionized charge. This ionized charge is a certain allotropic form of energy. If certain elements are placed in the ink to readily neutralize that charge the ozone is broken down more quickly and the nascent oxygen set free at the moment of breaking down, liberated more quickly, made more available in higher concentrations and thus absorption goes on more rapidly. If hydrogen is present in the form of water vapor considerable useless hydrogen peroxide is formed instead of ozone, cutting down the ozone concentration.

Heat also breaks ozone down; the higher the heat the more rapid the process, thus heat should be applied only at the desired point.

Ozone concentrations are limited. The best generators now on the market will produce only 0.005 to 0.007 grams of ozone per liter, though one manufacturer has stated it was possible to build one to produce 0.010 to 0.012 grams per liter.

There is quite a list of dryers or siccatives available, most of which are activated by heat. Some are likely to activate the breaking down or deionization of ozone; others are not. There is little data showing much research on this idea.

III

A desirable varnish vehicle for a printer's ink to meet the requirements for sufficiently rapid drying must have the following characteristics to couple up in the best manner with the aids to drying thus far developed. It must not develop a skin when exposed to the air at room temperature in less than three hours or as much longer as possible. It must dry when exposed to the air spread 0.001 in. to 0.002 in. thick on a thin glass plate placed over a boiling water bath in 45 seconds or less if possible. It must not "liver" or "jell" in the can in storage. The dryer it contains should be especially reactive to both ozone and heat. It should dry with the body and brilliancy of ordinary inks. Its mechanical features, tack, consistency, etc., must be easily controlled as in the ordinary inks, especially on multi-color work. The oil constituent should have, previous to milling, been processed so that drying is accomplished as little as possible by absorption of oxygen and as much as possible by polymerization, the happy balance of which will make the most successful ink. The ink referred to about meets these requirements.

William Feather's Reflections on Business

William Feather, President of the William Feather Printing Co., also contributes to Nation's Business, Philadelphia Public Ledger, New York Evening Post and Chicago Daily News.

THE first question most of us like to ask after we have shaken hands with a man is, "What do you do for a living?"

Until we have that information we rarely feel that we know our new acquaintance. We can't talk to him or appraise him.

This curiosity is a tribute to work as a molder of character. I have often been on shipboard with groups of 300 or 400 people. I came to know forty or fifty by sight or name, but I never considered that I knew anyone properly until I had found out what he did for a living.

When we are asked, "Who is So-and-So?" the questioner does not want to be told that he is the husband of a beautiful woman, or that he is a champion golfer, or that he has just inherited a fortune. Such information is interesting, but the real query is "what does So-and-So do for a living?"

The most efficient mechanical aids to drying thus far developed will have much good effect on the present-day inks, but their reaction is in nowise rapid enough to dry at ordinary printing press speeds. Thus inks must be designed to do half the job at least. This will probably introduce new chemicals into the art. Commercial solvents should be omitted because of their fire hazard.

It must always be borne in mind that any great advance in cost will be received unfavorably. The object of a high-speed drying ink is to save money, time, floor space and trouble.

IV

With such an ink to start with, it merely remains to develop the art of applying the aids to drying efficiently. This is not difficult on a stationary flat surface or even on a slowly moving web. With a web moving at high speeds there is a film of air sucked along, clinging tenaciously to the surface. If this film is broken up by any means such as a straight edge or felt brush it forms again within an inch of travel even at speeds as low as 50 ft. per min. It is better not to try to break it up.

The radiant-heat light referred to of course readily passes through this traveling film. This film is room air and need not necessarily ever be heated; in fact, it is better not to. We only want to heat the inked surface. The light is a compact little unit consisting of a glass tube of any length with a resistance filament wound on a non-conducting stylus inside and enclosed in a silver reflector. It is essentially an elongated electric light and meets the space conditions.

To get ozone through this film and in contact with the ink presents a problem. This air film is of such volume, particularly at high speeds, that it hopelessly dilutes a stream of ozone distributed over the inked surface. A way was found, however, by means of a water-cooled, slotted tube. The tube is adjustably located over the web only a few thousandths of an inch away. The web runs over a straight edge just below it. The slots are about 0.002 in. wide. The ozone is under pressure and passes through the slots at a velocity of 4000 to 5000 ft. per min. Thus the cool ozone is plunged through the air film and immediately broken down completely by means of the heat and siccatives in the ink, none escaping into the room, the ink drinking up the nascent oxygen liberated in such close proximity to its surface.

Thus we need to preheat the inked surface, blow a blast of cool ozone against the bare surface of the heated ink, reheat the inked surface and cool it with the blast of ozone again, and repeat until the ink is dry.

V

This was tried on a continuous web press of the Cottrell type and it was found six of these reversals permitted web speeds of 125 ft. per min., length of treated run about 7 ft., time of drying about 3.3 seconds, acquired temperature of web at each heating about 200°. The paper lost very little basic moisture and did not contract apparently.

The experimental ink used presented a good printed surface when dry. Red and blue colors were present. No ink came off on the tympan sheets on second impression roll. Excess heat was removed by water-cooled roll just before the second impression on the opposite side of sheet. Time of run two hours at each test.

A trial was made on a Miehle type of press using the same experimental ink printing on only one side. The gas flame was removed and only one ozone applicator and one light heater attached to the carriage. The paper acquired about 140° F. of temperature. Ozone was applied in no such quantity as on the web press. The sheets were not cooled so that most of the heat and all the ozone not broken down in the first contact with the heated sheet was buried in the stack. In one hour the full stack was dry. When employing the gas flame only and using the ordinary commercial inks, the drying time at this printer's is 6 to 10 hours.

With a little more work on the design of the mechanical apparatus either of these systems should be applicable to multi-color web presses or flat platen presses. It certainly lies within the realm of commercial possibility right now.

VI

On the Cottrell type of web press the drying apparatus may be located in place of the rolls of offset paper. The web is led from the first impression roll through the drying apparatus, around the second impression roll, back through the apparatus for drying the reverse side of the web and then to the cutting, folding and stacking devices.

Each lead through the drier has to be an exact number of sheets in length so that printed pages will be exactly opposite one another. This is regulated by means of a compensating roll.

Due to the fact that the two impression rolls or packing cylinders are located one directly over the other and that there is a limit to the angle at which the web can leave the lower roll all of the space available can not be used to the best advantage. If the lower roll could be brought back out from under the upper one, space conditions would be about perfect to get the necessary run of web for treatment.

On the Miehle type the carriage can be made heavier to carry enough drying apparatus to get the drying time down to a matter of minutes, but to dry at press speeds the entire draw-out and stacking devices will have to be redesigned.

On a Harris Automatic the entire draw-out and stacking devices will have to be redesigned to use the press for high-speed drying at all.

VII

No study of newspaper presses has been made. Unquestionably there would have to be a considerable rearrangement of parts necessary. There is no reason why this process should not be used for a colored advertisement section in a daily newspaper. The necessity for higher speeds would be largely compensated for by the more absorbent paper stock used. It would mean the addition of plate cylinders and fountains and the lengthening of runs between certain cylinders to gain space for the drying treatment. There is no question, however, as to the advertising advantages to be gained as a very good grade of multi-color printing could be accomplished.

To prevent offset by drying the ink at press speeds by such a process as described may seem somewhat revolutionary, but it is safe to predict a general acceptance of the process sooner or later. It merely remains for the ink chemist and press mechanic working together to be given an opportunity to prove in a commercial way what they have demonstrated in a laboratory manner. It is believed that only by this means will the last "bugs" be worked out and the process take the place of present methods.

British Research Association

The fourth publication of the British Printing Industry Research Association has been issued. The memorandum deals with problems submitted to the Association by its members. The subject matter includes show card mounting, wax engraving, heating of stereo metal pots, setting-off of ink, heat resistance of grease-proof paper, chromium plated photogravure cylinders, scumming of photolitho zinc plates, and method of printing on cellophane.

Members are reminded that in private investigations every care will be taken to guard against the circulation of information.

The Mechanization of Newspaper Making

(New York World-Telegram)

Romance and engineering difficulties complicated the job of putting staunch pins under the ten-story publishing plant of the New York *World-Telegram*, which was practically completed and opened for use on July 13th.

When the Indians owned Manhattan the Hudson ebbed and flowed above the site of the sturdy new *World-Telegram* building. In the eighteenth century, with nearby Dey Street noted for the handsomest plane trees in town, clippers nosed into West Broadway docks and their sterns swung above the same spot. Then the land-hungry metropolis encroached on the Hudson, filling in to the western edge of West Street.

All of which complicated and delayed the job of putting staunch pins under the ten-story publishing plant.

It required only one month to thrust the reinforced concrete building, covering 24,500 square feet, a half block, up to its water tower. But it took a good five months to pierce the "made ground," silted river bed and the carcass of a sunken ship to bedrock seventy-five feet below.

Foundations for the building were sunk seventy-five feet below the cellar. Sixty feet of this was tough going. William Ginsberg, general contractor, and George J. Atwell & Co., subcontractors, found a stubborn opponent in the old river bed. The mud was tantalizing enough, but flint boulders that turned back the twenty-inch piling delayed them weeks at a time, until Mr. Ginsberg developed a new method of piercing the flint. As speed was the essence of this contract, Mr. Ginsberg adapted a Calyx drill, never before used for under-water work. He had Ingersoll-Rand engineers build a special Calyx. It drilled the boulders ahead of the pilings and the job went ahead.

When the twenty-inch metal piles reached bottom they were filled with concrete. An ingenious valve on a compressed air pipe regulated the pressure to keep out the mud, yet admit the concrete.

The foundations were seated by March 7, excavating work having started in early October after a brief period spent in demolishing some old buildings. Plans then called for a six-story building, later to be heightened to ten. But the *Telegram* abruptly acquired the *World*, necessitating a larger plant and pointing up the demand for speedy completion.

Without waiting for finished plans, Mr. Ginsberg plunged ahead, almost literally tearing rough sketches from the hands of the architect, James William Thomas of Cleveland. By April 15 the concrete frame was up, the roof on. The Industrial Engineering Corp., subcontractors, poured concrete as rapidly as ever was done—two floors a week. Mr. Ginsberg ordered three eight-hour shifts a day.

Less than three months later—June 10—the *World-Telegram's* heavy equipment had been installed completely and a certificate of occupancy issued to The New York Telegram Building, Inc., separate corporation which owns the building.

EVERY MODERN DEVICE INSTALLED

The *World-Telegram* occupies the basement, the first five and the tenth floors. The remaining floors will be rented. Our story, however, primarily concerns the mechanical equipment housed within this modern new $3,000,000 building. Most everything in the building is new and of the latest type of equipment. The current notion is that newspaper-making is an industrial process and that the paper should be housed and equipped much like a high-grade factory. No device which would quicken production or enhance the well-being of the 1500 employees has been neglected—even to the installations of a washed air system which changes the air every ten minutes. More than $1,000,000 was spent in equipping the plant.

The ceilings and floors are sound-proofed and every piece of equipment was carefully considered and exhaustively tested before installation.

STRAIGHT-LINE PRODUCTION

Everything that possibly can be attended to by mechanical methods is taken from the hand of man in this unified production system.

William J. Mingle, vice president of the firm of Berry & Mingle, Inc., New York City, print shop designers and engineers, refined the straight-line production principle, beloved by the modern industrialists, in the composing room. He has so arranged that all operations from receipt of copy to finished make-up of the page forms shall progress definitely toward one point. There are no back tracks and no blind alleys in the work flow arrangement of what is called the model composing room. Copy, type, proofs, made-up pages are routed so that no steps will be wasted.

View of ad alley, New York World-Telegram *composing room. Note the absence of all overhead fixtures above the work tops. This arrangement provides unobstructed vision, better light and free air circulation.*

NEW DEVELOPMENT FOR THE COMPOSING ROOM

A large horseshoe desk for the "late news device" removes racing, baseball and football editors from the floor upstairs. With telegraph and telephone wires at the elbows of the editors, minutes are clipped from the interval between the end of any important athletic event and the time you scan Page One for the results.

Editors sit inside the U-shaped desk, printers on the outer rim. As the results are passed from editor to compositor, corrections and additions are made in the type "stick" the printer holds. It would take too long to send these last-minute figures, through the ordinary routine, to the type-setting machines and stereotype room. A method known in print shops as "fudging" is used instead. The result—scores, forms, etc.—are locked in a "fudge box" and dropped to the press room, where the "fudge box" is locked into the page on the press cylinder and the presses resume their eager flight.

Portion of the New York WORLD-TELEGRAM'S *line-casting machine installation. Twenty-one Intertype Mixer machines are being used for straight-matter composition. The composing room copy desk is located at the end of the machine lineup (not shown in the picture).*

The "late news table," designed by Mr. Mingle, is the most effective advance incorporated in the new plant.

INSTANT MARKET EDITIONS

Speed in delivering the market editions to Wall Street is assured by placing the stock table room just outside the composing and stereotype rooms. There, on high benches, designed by Mr. Mingle, market tabulators face printers. The same practice is followed as on the "fudge" desk. Tabulators call out transactions to printers, who insert the appropriate figures in their sticks. Tickers bring the quotations to tabulators. When the market closes the printers rush their corrections to the page forms, the pages are cast and the presses gather speed below.

Ordinary news drops from the editorial room on the third floor to the composing room, on the second, by Lamson pneumatic tube. A copy cutter divides it among the Intertypes, the headlines going to three specially equipped machines. When the machine compositor finishes a take he walks it to a dump. Upon his return he picks up the next take. The dump adjoins proof presses. Proofs are pulled and carried a short distance to the seven model proof desks which are lighted with daylight lamps set on adjustable stands.

CORRECTIONS MOVE BACK INTO STREAM LINE

Corrections move back into the stream line, are made, and the type passes a few steps to ranks of make-up stones capable of holding seventy-two pages at a time. Here one alley is for make-up editors, one for make-up printers. The stones, in reality of steel, are on a level with the trucks which haul the locked-up page a dozen feet to the stereotype room.

All the equipment required for making up a page—the chases which hold the form, column rules, leads, slugs, dashes, etc.—lies ready to the printer's hand. Contrary to the old practice, Mr. Mingle's make-up stones have no upper rack to interrupt vision, communication and air between the floor and the sixteen-foot ceilings. Everything is below the stone.

When the pages reach the stereotype room two Hoe rollers transfer the type impression to a soft matrix. The matrix is baked hard and shaped semi-cylindrically in an electrically-heated "Superspeed" scorcher. It then goes into one of several Wise Wood automatic casting machines, each of which turns out four plates per minute.

The finished page plates are seized from an automatic Wood caster, trimmed and cooled by machinery and pneumatically dropped to the pressroom below at express speed on to a gravity conveyor a block long.

LONGEST LINE OF HIGH-SPEEDS IN THE WORLD

The 25 Hoe super-speed units—said to be the longest line of high-speeds in the world—are located in the basement running the full length of the building and form an impressive sight even to those who are used to such line-ups. The delivery room, which occupies a large portion of the long West street side of the building (on the first floor) is separated from the presses by a glass partition. Six Cutler-Hammer conveyors run the folded papers into this room, a scant 12 feet away. Only 40 feet separates the presses from the motor trucks lined up at the West street curb to carry the papers away. The remaining positions of the first floor are taken up with circulation offices.

On the Park Place side is the receiving department where newsprint and other supplies are taken in. In the basement on this side are the General Electric press control, the complex and effective ventilating system machinery, and power units to transform current used for operating the printers from alternating to direct current.

THE INTERTYPE MIXER MACHINES

There is a wide aisle in the composing room (on the second floor) separating the ad alleys from the line-casting machines. The composing room copy desk is in the center which also is the clearing place for the Lamson tube system which travels throughout the building. The late sports news desk, previously described, is at the rear, flanked by the typesetting machines—32 Intertypes and three Linotypes.

There are thirty-five line-composing machines, of which thirty-two are Intertypes. The battery of twenty-one news machines consists exclusively of two-magazine mixers—new Intertype Model F's, which are designed to combine the advantages of maximum speed and instant magazine changes.

Section of the stereotype room, New York WORLD-TELEGRAM. *The Wood Auto-Shaver machines are finishing plates. They are taken from these machines and placed on Lamson pneumatic plate drops and delivered to the pressroom conveyor. Each of the plate drops will deliver six plates per minute to the pressroom.*

These mixers, which include four fudge machines, set all the straight composition for the *World-Telegram*. They are said to have all the speed of the fastest machines heretofore used for straight composition, and in addition the advantages of instant changes from one size or face of type to another. All operators can handle takes of copy calling for different sizes of type, and can correct proofs containing different sizes, with all the speed of one-size straight composition. This saves much handling of copy, slugs, proofs, and corrected lines, and greatly reduces errors and delays. As this is the first installation of all-mixer equipment for straight news composition, the results will be watched with interest by newspaper publishers throughout the world. The new idea is expected to effect substantial economies of time and money.

The *World-Telegram's* ad and display machines include ten three-magazine Intertypes, all equipped with the new quick shift recently announced by the Intertype Corporation, and one Intertype D-s.m. for head letter.

THE AD ALLEY

Advertising copy moves similarly in a straight line from the "publication section," where ads are received, cuts, matrices, etc., stored and issued to the advertising foreman's desk. Mr. Mingle supplied the ad alley with six assembling frames, for four compositors each, where the ads are put together. The tops are of stainless steel. In racks along each side every bit of equipment, including twenty-six types of border, are stored.

THE LUDLOW MACHINES

Three Ludlow Typograph machines set in triangular formation in order to economize floor space, can be operated simultaneously for casting large display faces in the ad alley. The casting units are flanked by convenient cabinets containing a varied assortment of the latest advertising display faces.

At intervals throughout the ad alley are placed metal-cutting saws furnished by the American Steel Chase Co., which firm also supplied a mitreing machine which mitres the strip material used for advertising borders, up to 18 points in thickness.

MONOTYPE MATERIAL-MAKERS

To complete the non-distribution system employed by the *World-Telegram*, one Monotype Type-and-Rule Caster and two Material-Making machines are used. The racks under the ad alley work tops are kept filled with strip material, the bulk of which is cast and automatically cut into lengths ready for immediate use.

DESCRIPTION OF THE PRESS

The twenty-five unit super-production unit-type newspaper printing press, with six super-production double folders was introduced by R. Hoe & Co. in July, 1928, and will enable the *World-Telegram* to print complete newspapers at the following running speeds:

720,000 newspapers of 4-6-8-10-14 or 16 pages an hour or

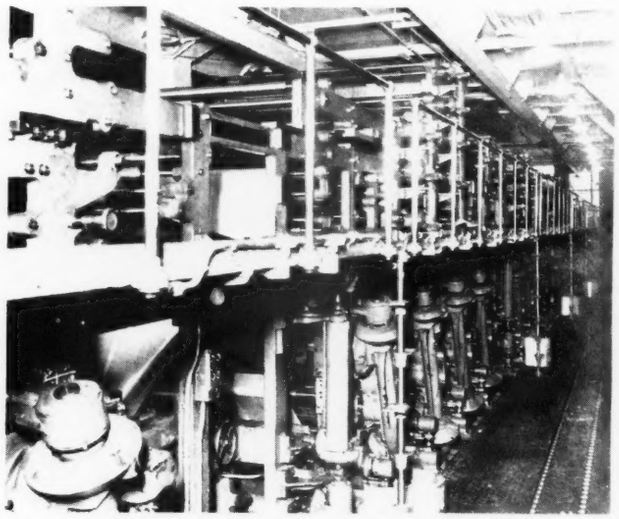
600,000 newspapers of 18 or 20 pages an hour or

360,000 newspapers of 22-24-26-28 or 32 pages an hour or

300,000 newspapers of 36 or 40 pages an hour or

180,000 newspapers of 44-48-52-56-60 or 64 pages an hour.

The manufacturers claim that the outstanding feature in design of the Super-Production press is the arrangement of the cylinders in pairs one above the other, making the machine one that can be operated from the outside, with easy access to all webs and rollers and with all operating parts readily accessible.

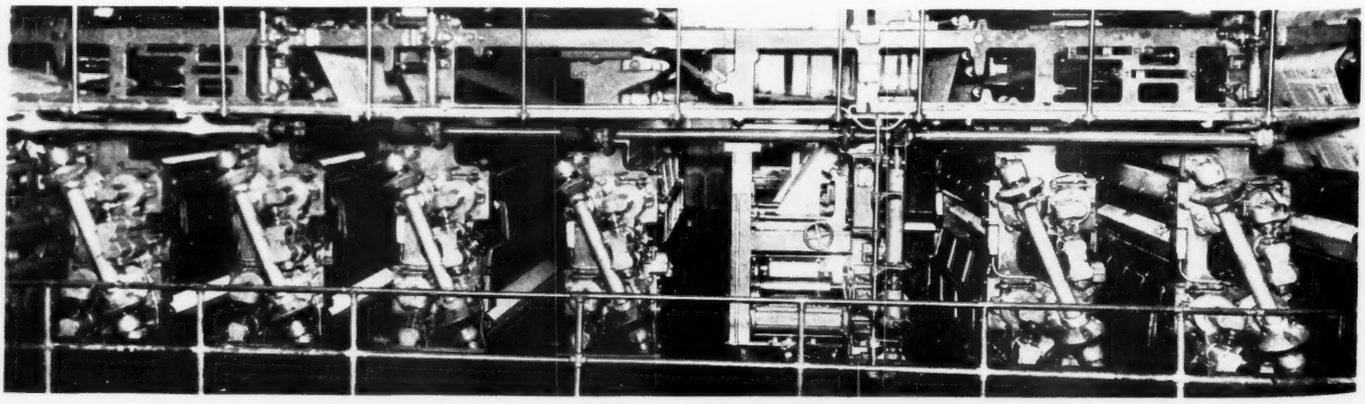


Twenty-five Hoe high-speed units print the WORLD-TELEGRAM. *This is said to be the longest press installation in the world. Within the course of an hour a web of paper six feet wide and 400 miles long passes through the presses.*

This huge printing machine is composed of twenty-five printing sections or units and six Super-Production double folders arranged in one continuous line. Each unit is composed of two plate cylinders and two impression cylinders.

Every plate cylinder carries eight stereotype plates, and as there are two plate cylinders to each printing unit and three printing sections, the entire press has a capacity of 400 plates. As a plate weighs about 70 pounds the "fully dressed" press carries approximately 14 tons of stereotype metal.

The printing units are all equipped with the Hoe pump system of ink distribution, one pump for each plate cylinder, by means of which the ink is pumped from a central supply tank directly to the ink distribution cylinder.



Section of the six-folder installation of the new Hoe press in the New York WORLD-TELEGRAM. *No cams or tapes are employed. For unlimited speeds, the internal gear folder is provided, in which the motion is entirely rotary and at the same time continuous.*

Each pump consists of 32 small pumps working in unison and is mounted, with its controls, in a small box on the end of a long transverse bar or rail in a position outside of the press, permitting convenient adjustments. The rail contains 32 small brass pipes, connected to the 32 small pumps, through which the ink is conveyed to each column of the four 8 column plates on the plate cylinder. Each pump-box has four rows of control screws for regulating the flow of ink to the plates, one row for each plate and one screw for each column and a master screw for each row. Through these control screws the flow of ink can be shut off or regulated for a single column or an entire page, as desired, by the adjustment of one screw.

The pump-box also contains a float for keeping the ink at a constant level so that the supply is regulated automatically without any attention from the pressman. The pump itself is directly driven from the plate or type cylinder. The amount of ink fed to the plates is, at all times automatically proportionate to the speed of the press.

The unprinted white paper, in rolls about six feet wide and 34 inches in diameter, is mounted on reels below the press sections and runs in continuous webs through the sections, passing between the plate and impression cylinders where it is printed first on one side and then on the other, or "perfected," as it is called. The web, is then led over rollers to the Super-Production double folder and here the collected webs, after being slit in the center are led from the "V"-shaped formers where they receive their first longitudinal fold. They are then led through nipping rollers to the folding cylinder (where they are held by sharp, movable steel pins) and cut to the proper length by a special form of knife on the cutting cylinders, which revolves against these folding cylinders. At the same time, the papers receive a second or half-page fold and are delivered on an endless belt ready for distribution. A mechanism on the press pushes every fiftieth paper outwardly and a little in advance of the others to show the number of papers delivered.

To perform all these operations it is necessary that these folders should be capable of functioning properly at almost unlimited speeds. For this purpose, the Super-Production Internal Gear folder is provided, in which the motion is entirely rotary and at the same time continuous. This does away with the use of cams and tapes and the maker claims the mechanism will fold the paper accurately and positively at a speed restricted only by the limitation of the paper, ink, composition rollers and other conditions of printing. Within the course of an hour, a web of paper about six feet wide and approximately 400 miles long passes through the presses.

SAFETY DEVICES

This mammoth printing machine is fitted with numerous safety and labor-saving devices, among which are:

Feeding-in pans are installed between all the printing cylinders so that it is practically impossible for any of the operators to get a hand or an arm crushed, when threading the web of paper between the cylinders.

In the passageways, through the press, there are screen guards to prevent anyone coming in contact with the revolving cylinders.

All exposed gears are covered on their faces and sides with heavy cast iron guards.

The sharp rotating slitter blades, used to slit the webs have guards for the operator's protection.

All keys are covered with guards and caps to prevent the operator's clothing being caught when the press is in motion.

All nipping and folding roller adjustments may be accomplished through the use of hand wheels outside of the folder frames.

The knife box in the cutting cylinder has a safety lock to prevent it flying out of place during operation.

Each unit of the press is protected by shear pins, set to bear a given load, which if exceeded causes any inexpensive and easily replaceable pin to break, immediately relieving the strain that would otherwise be passed on to other vital working parts.

LABOR AND TIME-SAVING DEVICES

A quick-acting plate clamp arrangement enables the stereotype plates to be securely fastened to the plate cylinder in the shortest possible time.

The pressure between the plate and impression cylinders may be regulated by an eccentric adjustment while the press is in operation. This new Hoe self-indicating eccentric micrometer adjustment permits adjusting the impression from outside of the frames while the press is in operation to obtain paralleling of plate and impression cylinders without gauges or other hand tools. This type of adjustment eliminates all guess work in setting the impression and permits both the pressman and the foreman to tell immediately whether the impression is correct simply by looking at the micrometer gauges at either end of the cylinder.

Other features are: Transverse collecting arrangement, enabling many special products to be run, independent nipping roller-drive, locking roller sockets, steel plate and impression cylinders, and ball-bearing pillow blocks. The printing sections and the double folders are accessible from all sides, making it a convenient press to plate and handle.

The gigantic printing press is driven by six powerful electric motors, each with a capacity of 200 h. p. It weighs approximately 850 tons.

Your Questions Answered

E. W. writes: "Have you any information as to the proper temperature of water used in the Autoshaver; the allowable limits of temperature of the cooling water; how variation in the water temperature affects operation of the machine, and, during warm weather will the temperature of the water rise too high when using a recirculating system?"

May we hear from our readers as to their experiences with a recirculating system?

Mold-Turning Segment Screws

Y. M. Writes: "What can I do to prevent the quarter and three-quarter mold turning segment screws working out on a Linotype?"

Answer.—Simply apply string washers under the screw heads and tighten them down as much as possible with a large screwdriver. The hardened steel screw heads hold much better with string or spring washers. The ejector lever pawl cam screw may also be treated in the same manner.

Difficulty in Changing Ejector

I. B. writes that, usually, he must shake the ejector lever before he can depress the ejector locating lever previous to changing blades on an Intertype.

Answer.—You have no doubt noticed that if the ejector lever is moved forward, the locating lever may be depressed readily. There is an adjusting screw about half way down the lever which can be turned to eliminate the shake at normal position. Back the machine to allow forward movement of the lever to make the screw and check nut accessible for adjustment. Turn the screw enough to leave just a small amount of play between the lever and the cam at normal position. There is a locking plunger at the end of the ejector locating lever which, when the locating lever is depressed, must enter a notch in the blade holder to align a projection on the holder with correspondingly T-shaped cutouts in each of the ejector blades, before the shifter lever can be moved to change to another blade in the blade box.

The Mechanics of Newspaper Color*

A REPRINT of an address given before the students of Yale University last November by Colonel Robert R. McCormick, publisher of the Chicago *Tribune*, found its way to the office of Henry A. Wise Wood, President of the Wood Newspaper Machinery Corporation. In this address, Colonel McCormick told the students that he could see brown, yellow and pink in their faces, and that they wore green shirts and blue ties. Among them he could see all colors and shades except black and white, and yet so limited is the newspaper art that it is compelled to depict them in black and white.

The reprint of the address did not quote Colonel McCormick as saying that before long the *Tribune*

HENRY A. WISE WOOD

Many-sided is the personality of Henry A. Wise Wood, inventor, salesman, poet, sportsman, talker, and businessman. He is the best turned-out inventor on record, appearing equally well-dressed in golf suit, dinner coat, or overalls. The latter he dons whenever one of his presses is installed. Going to the pressroom, he watches over his machine for the first few days to be sure everything goes right.

plans to have sixteen daily pages in full color, because he did not know at that time that such a thing would be possible. Mr. Wood, however, upon reading the reprint of the address, went to see the publisher. According to *Fortune*, he told the Colonel that he was working on a press which would print full colors of the highest quality at speeds considered fast by most press-builders for black and white work. His blue-prints were almost completed, and he was looking for a publisher with the initiative and the resources to give his press a try. Colonel McCormick had plenty of both. When Mr. Wood went away, the Colonel had given him a trial order of one color unit and assurances on the basis of which Wood expects to erect twenty-nine color units and fifty-eight black and white units for the *Tribune* at an early date. Provided, of course, Wood's first machine lives up to the claims he made for it.

When the *Tribune* appears in color, it will be pioneering in an enormously rich field, one which may have as much effect upon the modes and manners of a people as it will undoubtedly have upon the balance sheets of its successful launchers. There is, in the evolution of far-reaching technological changes, a certain point exactly at which the experimental, the pioneer, becomes the accepted, the orthodox. Messrs. Wood and McCormick believe they are in sight of this point.

The same cylinder arrangement with which the *Chicago Tribune* hopes to print full colors on every other page at 50,000 an hour is used in the Claybourn press which Scripps-Howard is installing to print up to 30,000 an hour in the color magazine of the Pittsburgh *Press*. It has been used for twenty years on the McKee which prints the color for the *Saturday Evening Post* at 4,000 an hour; and, as far back as 1871, it was used to blazon gaudy labels on flour bags! Mr. Wood's secrets are his refinements, with which he proposes to make his color presses as fast and practical as his black and white presses.

Colonel McCormick, of the *Tribune*, is sanguine about the success of the Wood color device, "but if that does not give satisfaction, we will get full colors throughout the paper some other way." The point on which he is in doubt is the possibility of drying four layers of color ink in the fraction of a second that will intervene between the printing and the folding of the color page—a folding in which too wet a sheet would surely smudge and blot.

To achieve even 4,000 an hour without smudging, the McKee press, on which the color pages for *Collier's*, the *Post* and other large circulation magazines are printed, sprays paraffin over each sheet to imprison the ink against the pages, there to dry at leisure beneath a thin film of wax before the sheets are folded the next day. This care would not be needed at such slow speed were the magazine paper as absorbent as newsprint, whose fibers have never had their pores crushed and their thirst quenched in resin and bisulphide of lime. But the troubles of the magazine men at 4,000 give some hint of the in-drying problem faced by Mr. Wood

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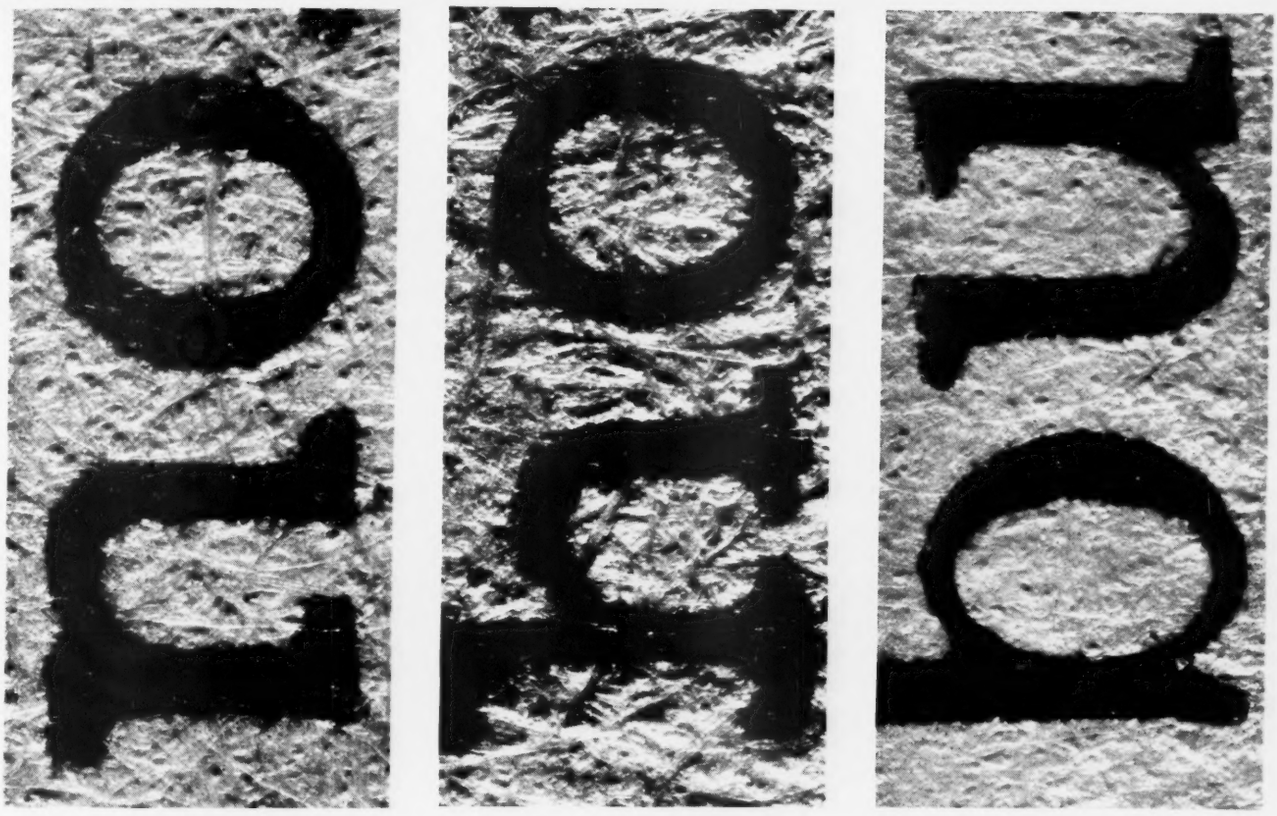


I II III

The macrophotograph tells Wise Wood a great deal about the paper on which his presses must print. (1) New York "Times" (long fibers on a fairly smooth surface make this one of the best newspaper sheets in the country, comparable to the excellent paper on which the "Christian Science Monitor" is printed); (2) the late New York "World" (this uneven, coarse-grained paper made good printing an impossibility, is perhaps one reason the "World" was a commercial failure); (3) the "Saturday Evening Post" (obviously a much smoother surface than newsprint, obtained by dissolving the ground wood pulp fibers of the paper in bisulphite of lime).

when he set simself to print four colors at 50,000 an hour—fifteen a second.

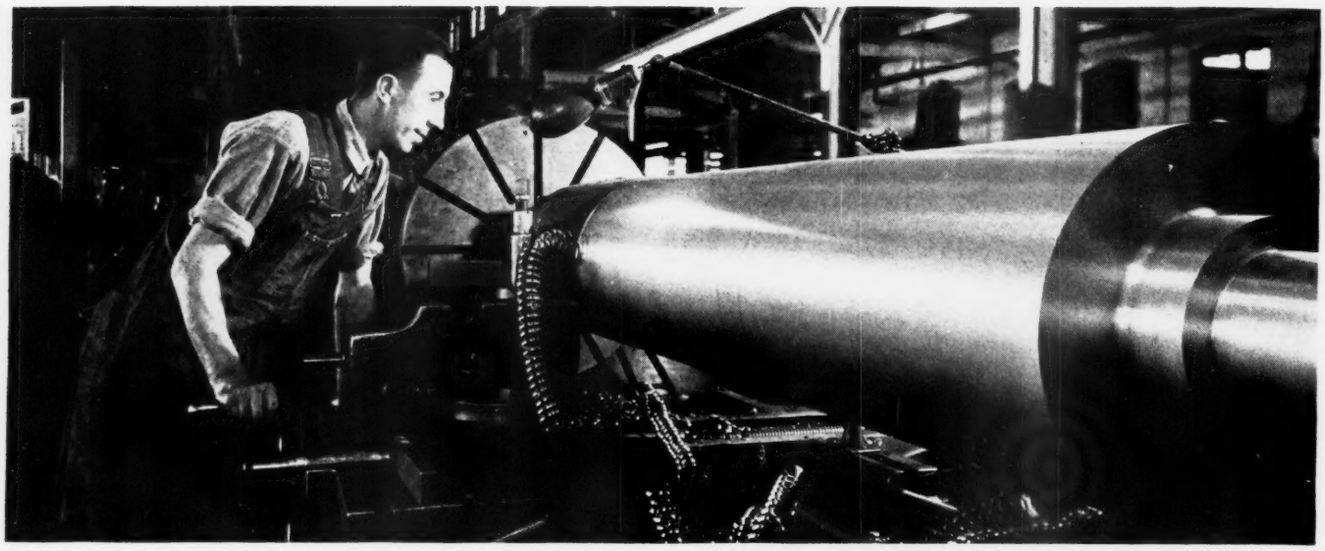
For one-color printing, the ink-drying problem on newsprint was comparatively simple even at 75,000 or 80,000 an hour, for the highly absorbent newsprint had little trouble filtering the oil out of the thin film of ink deposited by the type—seldom more than 0.0010 inch thick. When the color press lays four such films one on top of the other, however, the absorptive powers of the pages will be overtaxed. Much ink will have to dry by oxidation or evaporation rather than by absorption. More volatile oils must be employed; more opaque pigments must be sought to permit a thinner coating. Perhaps depth and richness of color must be sacrificed. The problem is still unsolved in the hands of the chemists of the International Printing Ink Company, whose difficulties have been further increased by Mr. Wood's stipulation that their yellow ink, for example, must cost less than five cents a pound, as against $1.65 for the yellow ink used in *Fortune*. The ultimate solution may be the use of ozone as an aid to drying.

Mr. Wood's competitors do not agree with Colonel McCormick that ink-drying creates the most serious obstacle that must be met by the Wood color unit. To them, the most difficult problem is the achievement of the highest quality of reproduction without the long hours of make-ready now required before the old-style color press can start printing colors for Sunday comic and magazine sections. These competitors brand as fantastic Mr. Wood's claim that he will achieve, with no makeready whatsoever, results infinitely superior to the finest ever produced at slow speeds and after long make-ready, on the color presses which have been in operation for the past thirty-odd years.

No such boast of superlative quality is made for the new Walter Scott color units which are already making three additional colors available, at full speed and without make-ready, on eight out of each sixty-four pages of the Minneapolis *Star* and the Erie *Dispatch*, nor is such a claim made for the Hoe color unit which is similarly making two extra colors available on a few pages of the Seattle *Times*.

Similar modesty covers the claims made for the color work achieved by the Spokane *Spokesman-Review*, the Los Angeles *Examiner*, and a few other newspapers which obtaining additional colors by putting color ink in an extra fountain and then threading the paper through an ordinary Hoe press in such a way that the type page will pass through enough additional units to print the desired number of extra colors. Both Hoe and Scott recommend the use of make-ready and admit that better results are obtained on the slower presses which they manufacture to print Sunday color sections early in the week. On these presses, at least a day is need for make-ready before the run can start.

Mr. Wood himself, however, not only insists that his high-speed color work will be finer than any ever done at any speed with any amount of make-ready in any newspaper, but challenges comparison with the finest magazine color work. It is



MASSIVENESS AT PLAINFIELD—*The Wood shops in Plainfield, New Jersey (home also of Scott presses), are strewn with huge shapes of solid steel being machined into bedplates, side frames, cylinders, etc. For Wood was a pioneer in the introduction into the news press of massive, vibration-resisting steel construction. Especially important was his substitution of these two-ton solid steel forgings for the hollow cast-iron printing cylinders of earlier presses, an innovation that has long since been accepted by the other builders. The heavy cylinder, here shown being machined, offers a gyroscopic resistance, as it revolves, to the forces driving it from its true axis.*

small wonder that Colonel McCormick promises to equip his entire pressroom with color units if Mr. Wood can make good his glowing prospectus.

"Color printing," Mr. Wood says, "has always been a slow art, an art of infinite adjustment. My process makes it a swift, precise, adjustment-less art adapted to the time limitations of the newspaper. It will take full advantage of the soft beauty of the newspaper sheet with its freedom from the hardness and gloss of the magazine coated paper color page." The only rival whose quality Mr. Wood will recognize is the Claybourn which the Pittsburgh *Press* has installed to print at half the speed Mr. Wood has promised the *Tribune*.

On all the standard model Sunday magazines and comic-page presses, the impression cylinder has a hard or semi-hard surface which is built up during the make-ready with layer upon layer of thin tissue paper to compensate all the imperfections and irregularities in the printing plate and assure an even pressure over the entire page. On the ordinary newspaper black-and-white press, a soft blanket of rubber, felt, and cellulose is substituted for the hard blanket of the magazine press, and the resiliency of this covering is required to perform automatically the function of the laborious make-ready. Mr. Wood claims that he has invented a new type of blanket of undisclosed composition, which will combine the precision of the hard blanket with the simplicity of the soft.

In addition to ink-drying and make-ready, Mr. Wood faced a third major problem in adapting the color press to the superspeed operation. This was the difficulty in "registering" correctly—printing the red, for example, exactly in its proper position on the sheet in relation to the yellow and blue. One-sixteenth of an inch variation is not unusual on the ordinary slow-speed magazine color press, any reader of the Sunday comics must realize, whereas satisfactory color reproduction in anything but flat colors loses distinctness if the the register errs by more than one thirty-second of an inch.

The uncertain register commonly associated with newspaper color work is due, of course, to the fact that the web of paper must travel anywhere from eight inches to eight feet under tension between one color impression and the next, the only exception to this rule being a few units equipped to strike in only one additional color and the Claybourn now being erected in Pittsburgh. Under that tension, the paper will show a variable longitudinal stretch and perhaps a lateral drift if the pull is stronger on one side than on the other. Many devices have been built to compensate for this condition, but microscopic accuracy still remains more than difficult.

Mr. Wood believes he has solved the register problem by breaking completely with the newspaper color press and adapting to his needs the fundamental design of the fastest magazine color press. On this, the McKee (Cottrell) press, the paper is held firm against a single large impression cylinder while all four color impressions are applied—instead of running free to pass between four different impression cylinders and as may scattered type cylinders. By this expedient, paper stretch and sway are alike avoided. In this solution of register problems he is not original. Claybourn has already used this principle in successful demonstrations at speeds up to half those Mr. Wood hopes to attain, and Goss is working to perfect a similar color unit.

Each color page printed on the Wood unit will have its own four separate ink fountains, a fact of considerable importance to the flexibility of the color work. Engravers will not be compelled to obtain their effects with the four standard process colors of red, yellow, blue, and black, as in the great majority of magazine work, but will have their choice of any four different inks in addition to the black used to strike in the type before the paper passes from the ordinary printing unit to the color unit above. Mr. Wood foresees a wide use of flat pastel shades, but insists that if the *Tribune* wishes to reproduce a Rembrandt in four process colors, his press will render it with both beauty and accuracy.

Lines Ending In Hyphens

Lines which finish in hyphens are unsightly when two, three or more follow one another. Two may be permissible, but three or more should be fixed up some way or other—even if it means changing copy. Thin or close spacing is proper spacing typographically. It may be difficult to attain in newspaper work—though it shouldn't be if care is utilized—but it is almost a "must" requirement in general commercial printing, book printing, and in the typography of advertisements.—*Linotype News.*

Vital Elements In Newspaper Plant Planning

By J. W. THOMAS*

J. W. Thomas, Architect, Cleveland, Ohio, Tells About Some of the Essential Fundamentals in the Design of Newspaper Buildings. Elements of Flexibility and Future Enlargement Difficult Problems.

IN PREPARING an article on "Newspaper Architecture," I much prefer to approach the subject by writing about the *planning* of a newspaper plant. To many, the term "architecture" immediately presents a picture of imposing masses and of ornamental detail, whereas the architect's primary function (that of planning) is too often overlooked. A good plan automatically creates a harmonious exterior and in no modern industry is there the need of intelligent planning as in the newspaper publishing business.

The well-trained architect is always keenly interested in the esthetic phases of the profession of architecture—but—if he were to delve into his newspaper building problem ever so little he must surely realize very early in his analysis that he has finally secured one job where function and the inter-relation of the various elements of his plan must be his major consideration. If he were to start his studies with a preconceived architectural masterpiece in mind and endeavor to make his plan conform to this ideal, his client will quite possibly find that his architect has unconsciously been working for the opposition paper, whose plant is not as good looking but whose papers reach the street corner first and who has a lower page cost. This ever-present urge for the consideration of the practical is no excuse, however, for failing to achieve an architectural expression to the building that is commensurate with the importance of the daily newspaper to its community.

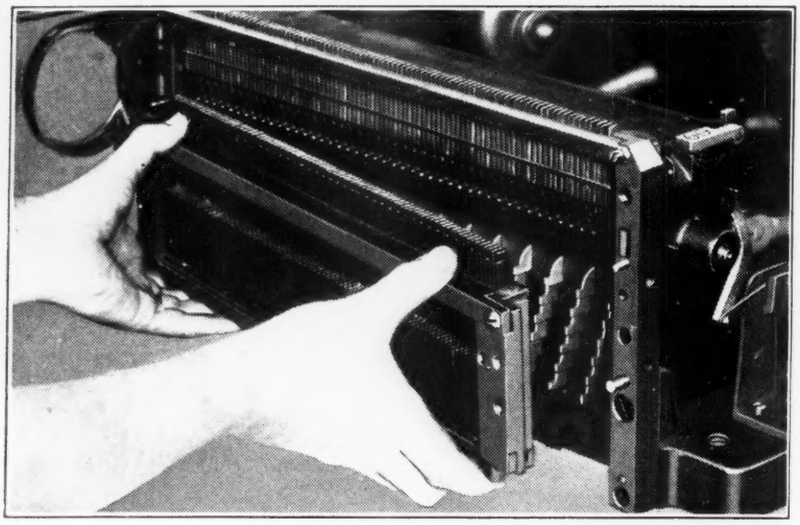
I know of no building problem wherein it is more necessary to make a most careful and exhaustive study of the processes of manufacture and distribution, materials and methods used, the function of each department, the mechanical facilities available for the various phases of the making of a newspaper and also of the limitations of this same wonderfully efficient machinery. Recognition should be made of the imperative demands for the proper coordination and inter-relation of departments, of machinery and of man power, and if the history of newspaper-making as illustrated by the developments within the industry in the past fifteen years should be reviewed, it will be appreciated that the importance of making, the plan and the construction flexible is most necessary. If the architect is well schooled and experienced and approaches his numerous architectural and engineering problems in the right manner, he will find that he can secure from the departmental heads and from the many intelligent mechanics of the plant, a wealth of useful information and some very valuable constructive criticisms that should add materially to the success of the plant. It is self-evident that nothing must be sacrificed in a newspaper plant that might add to the real function of a newspaper, which is the presentation of news and advertising matter to the reader within the least possible time, properly written, edited, printed and distributed.

It is surprising the number of newspaper plants that have been built in locations where a speedy get-away is almost impossible; have been built and very quickly outgrown through lack of appreciation of the news-

(Continued on page 32)

Example of Newspaper Architecture where the plan has governed the appearance. Standard stock building materials have been economically and architecturally assembled.

*Architect, Cleveland, Ohio.



LINOTYPE
LEADERSHIP

LINOTYPE KEY BARS

are removable as a unit

No Fumbling or Groping to Reach—Easy to Clean

The entire set of Linotype keyboard key bars is contained in a frame, and can quickly be removed as a unit for cleaning by the simple loosening of two screws.

This great time-saving feature—another exclusive advantage made possible by Linotype's swinging keyboard—reduces what had previously been an irksome task to the work of a few minutes.

The ease and convenience of removing Linotype key bars eliminates all fumbling or groping in the dark, and makes it simple and easy to keep them clean, and in efficient operating condition.

The unit removal of key bars is but one of many exclusive Linotype advantages described and illustrated in "Linotype Leadership." Look over your copy again, familiarize yourself with all the various and important Linotype advantages

TRADE LINOTYPE MARK

MERGENTHALER LINOTYPE COMPANY

BROOKLYN, NEW YORK · SAN FRANCISCO · CHICAGO · NEW ORLEANS · CANADIAN LINOTYPE, LIMITED, TORONTO, CANADA

Representatives in the Principal Cities of the World

Linotype Metroblack and Metrolite

Simple Process For Halftone Plates

By FREDERICK F. UHL

FROM Germany comes another rapid process for making zinc halftone cuts without a photo-engraver's camera and the usual line screen.

A regular continuous tone negative made on film or glass (film preferred) is exposed on zinc sensitized in the usual manner, but having a special flexible screen interposed between zinc and negative at the time of printing to form the dots of the halftone.

After the print is prepared, the etching can be done in the regular manner by tub or machine.

This method of making halftones has limitations which are more or less apparent. It is obvious that the cut must be the same size as the negative that was made by the photographer when taking the picture. If it is desired to make a larger or smaller cut than the original negative it can be done by making a print and rephotographing to required size.

Film negatives are preferred as they can be printed from the back of the negative allowing for the usual reversing operation. Glass negatives should be printed from the film side as the thickness of the glass throws the image too far out of contact when making a print.

The screens needed for this process are made in several sizes, the largest being slightly over 5x7 in. Mr. Carlsen, who brought the process to this country, states that the screens will last a long time and that replacement is comparatively inexpensive.

Mr. Carlsen, according to the W. E. Wines, manager of the A. N. P. A. mechanical department, does not claim that his method of making cuts is a complete substitute for the usual process. He does not even claim that he can make quite as good a halftone cut as can be made by a first-class operator using the regular process. In two of the demonstrations which he has made in this country, cuts were made from the negatives by his process and also from prints from these negatives by the usual photo-engraving process. Cuts were placed in a form and stereotyped. Press proofs were made from the curved stereos. In one case the photo-engraver's cut was better than the Carlsen cut, and in the other case it was not so good.

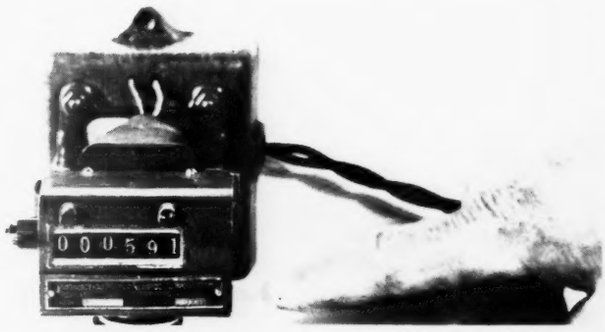
Mr. Carlsen believes that this process of making halftone cuts direct from the photographer's negative will be of value to those newspaper publishers who are unwilling to make the investment in a photo-engraving plant and incur the expense of its operation, but who wish to make their own halftones of local news events. Such publishers, for an expenditure of a few hundred dollars, can equip themselves to make halftones of the pictures brought in by their news photographers and, by further equipping themselves with an inexpensive copying camera, can make halftones of portraits and other photographs which the editorial department wishes to run. Mr. Carlsen claims that, under his instruction, any news photographer can easily and in a short time learn to make satisfactory cuts.

Newspaper Press Totalizing Counter

By WALTER H. OGDEN

AN INTERESTING piece of equipment has recently been developed by the chief electrician of the *Chicago Daily News*, in the form of a totalizing counter, which records on one or more electric counters the total combined production of all presses for any given period.

Through the use of this equipment in the *News* plant a considerable saving of time and waste has been effected, due to the fact that there are often fifteen or twenty thousand papers enroute from the presses to the platform where trucks are loaded for delivery, and those in charge of delivery had no way of being informed of last-minute production. A great many times



an overrun would occur before a signal to the presses could be given to shut down, or the presses would be shut down before the required amount of papers were printed, which caused repeated strip orders to complete the run.

Briefly an outline of the operations are:

First, by means of a ratchet switching device located on the press or machine, an electric impulse is produced for every hundred papers. This impulse is transferred to an especially constructed controller containing a rotating arm driven by a small motor which constantly operates at proper speed proportions during the operation of one or more presses. This controller also contains a series of relays for each machine circuit, which holds the impulse intact, until they are transferred by the rotating arm to the electric counter circuit, after which the relays are opened to normal position preparatory for the next impulse.

With this equipment electric counters are located at convenient points, both on the delivery platform and in the press room, which keeps the delivery department informed at all times as to what the actual production of papers is as they are printed, thereby enabling the man in charge to signal the presses to shut down when just enough papers have been printed.

Type High Tolerance

A tolerance of 0.001 in. or 0.002 in. is usually considered a permissible variance from the true type high standard, which is 0.918 in.

New York World-Telegram

August 25, 1931

Intertype Corporation
360 Furman Street
Brooklyn, N. Y.

Gentlemen:

We have now been operating our battery of thirty-two new Intertypes, including twenty-one of the new Model F Mixers, for approximately sixty days.

The performance of these machines during this period prompts me to express my appreciation of their excellent record on a daily run of twenty-four hours.

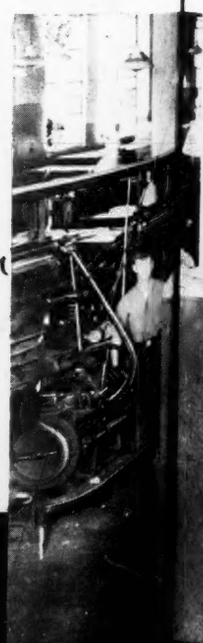
The new Mixers have been a revelation in speed and accuracy in production. Our experience with them truly proves that they are excellent "in the line" machines.

Let me also add my appreciation of the dispatch and ability shown by your engineers in moving our plant and installing these new machines. The work was completed without any confusion or delay whatever and you are to be congratulated upon the efficiency of your service organization.

Very truly yours,

J. S. O'Sullivan

Composing Room Supt.,
New York World-Telegram



THE PROGRESSIVE INTERTYPE
Made its way by the way it's made

The New Intertype Mixer Makes Good on Its First Assignment

The Last Word In Speed "In-the-Line" Machines

TWO SIZES OF BODY-TEXT AS FAST AS ONE—NO MORE COPY DISTRIBUTION OR SLOW ASSEMBLING

First order for the NEW Intertype Mixers came from the New York World-Telegram and called for *21* of the machines. The letter shown at the left speaks for itself.

The NEW Intertype Mixers provide the speed and accuracy necessary for "In-the-Line" News machines.

NO MORE COPY DISTRIBUTION OR ASSEMBLING OF TWO SIZES OF SLUGS. This NEW Intertype Mixer—Model F—sets both $5\frac{1}{2}$ point and 6 point (or any two sizes up to 18 point) from one keyboard without shifting magazines, AT STRAIGHT MATTER SPEED. This really makes four faces instantly available from one keyboard.

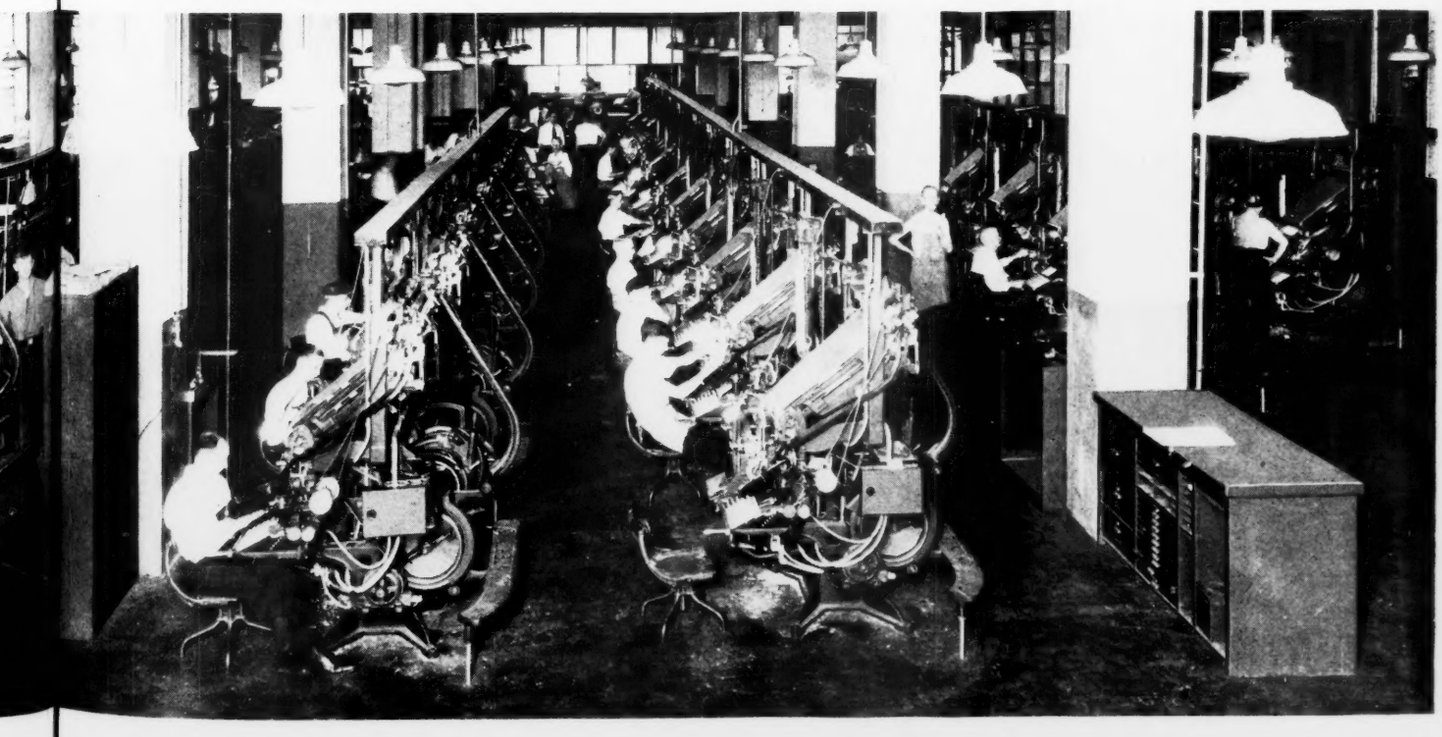
The new flexible mixer has the "FEEL" OF A STRAIGHT-MATTER MACHINE because it is the same height as any other Intertype, has the same distance between magazine and assembler and between distributor and magazine as on any other Intertype.

Progressive newspaper publishers who really want maximum production from a minimum number of machines will find it to their advantage to write to the nearest Intertype office for further information about the NEW Intertype Mixer—Model F.

INTERTYPE CORPORATION

360 Furman Street, Brooklyn, New York; Chicago, 130 North Franklin Street; New Orleans, 816 Howard Avenue; San Francisco, 152 Fremont Street; Los Angeles, 1220 South Maple Avenue; Boston, 80 Federal Street; Canada, Toronto Type Foundry Company Limited, Toronto; London and Berlin. Distributors Throughout the World

BELOW: A SECTION OF THE COMPOSING ROOM OF THE NEW YORK WORLD-TELEGRAM



Problems of Dry Mat Manufacture

By Jackson Townsend*

(Concluded from Last Month)

There are in general three distinct phases of fiber refinement necessary for the production of a dry mat. First, the shortening of the fiber to prevent pull-downs of the bolsters. Second, the splitting of the fiber to prevent the mat from being too coarse and harsh and to secure a more even formation of the sheet. Third, the hydration of the fiber.

DIVIDING THE FIBER

The first two are relatively simple in principle but sometimes very difficult in application. The amount of cutting or splitting the fiber depends on the nature of the fiber in its raw state and consequently on the original furnish as discussed under the selection of fibers. A fiber no matter how fine it may be, must not be too long if a good mold is to be obtained and if it is too short the mat will crack on the bolsters. The golden mean molds with sharp vertical shoulders and no cracking. The splitting of the fibers is difficult because any mechanical equipment which will split a fiber also involves hydration and cutting. It is, therefore, difficult to make a fine fiber from a coarse raw material and at the same time neither cut too much nor hydrate too much.

There are certain fibers which are reasonably fine to begin with and which split more easily than others. This is one of the reasons why most dry mat manufacturers favor certain grades of sulphite pulp. Generally speaking, the more finely divided the fiber, the more compact and better formed the mat, provided it is not at the expense of too much cutting nor too much hydration.

HYDRATION A MOOTED QUESTION

Hydration is perhaps the most mooted question in paper making today and if there are a dozen paper makers in this room, I doubt if any two of us could agree absolutely on what hydration is, how to control it and how to measure it. It is perhaps the most necessary phase of fiber preparation for dry mats, the most difficult to control and the least understood. In general, hydration consists of bruising the surface of the fiber, causing a chemical or mechanical combination of water with the cellulose surface and forming a colloidal or gelatinous covering to the fiber. The result is largely that it forms a more compact and closely woven sheet which when dried causes adhesion between the fibers and makes a tougher, stronger, more durable mat. It gives stretch to a mat and enables the surface of the mat to conform more closely to the type contours—in other words, gives a better mold. In excess, however, hydration produces a rough surface due to the difficulty of removing the water in the formation of the sheet. It will give excess shrinkage, and tendency toward buckles and blisters. A highly hydrated mat has good stayback but does not conform well to the contour of the casting box.

TESTING PULP REFINEMENT

Since all three of these phases of fiber refinement, viz., shortening, splitting and hydration, take place simultaneously in the same process and are dependent on the absolute uniformity of the raw fiber, one can easily understand how difficult it is to maintain definite proportions. And, just as they all three occur simultaneously as the fiber is being refined, so they all three affect in the same way—though perhaps to a varying degree—the usual method of testing the degree of refinement or slowness as it is called by paper-makers. If the fibers are cut very short or split very fine and with little hydration, they may give a slowness test which is identical with that of long, coarse fibers highly hydrated. In desperation, therefore, the dry mat manufacturers have probably evolved and have used more different methods of testing the refinement of pulp than all other branches of papermaking combined.

DIFFICULTIES OF CONTROL

Before discussing the methods of determining the condition of refined pulp at various stages of the process, I would like to point out some of the things which make the control of the correct proportions of hydrating, cutting and splitting very difficult. Even assuming that the fiber furnish is always identical, which is far from being the case, the temperature at various stages of the refining process determines the degree of hydration as compared with the degree of cutting. The degree of acidity or alkalinity of the water has its influence. The condition of the tackle or knives in the refining engines effect the relative proportion of refining influences. Frequently the mental attitude of the refining engineer has a decided bearing. To adjust, to overcome, or to control these varying influences we have been compelled to depend not on a single test nor altogether on a combination of known tests but to devise ways and means of checking and re-checking the condition of the fiber at frequent intervals throughout the refining process. With many of these new tests I am not familiar, but I would like to point out some that are generally known to show to what extent we labor to control the quality of our product.

OLD-TIME PULP "FEEL" METHOD

First and in some respects most important, is the old-time method of the "feel" of the pulp. Only a refining engineer of long experience has obtained the delicacy of feel which tells him instinctively just where he has come from and where he is going. The personal touch is, however, checked by every available mechanical means.

ELECTRICAL RECORDER

The intensity of the refining process is sometimes controlled and checked by an electrical recorder in the case of electrically driven equipment establishing a recorded curve which shows by the amount of current consumed if the proper adjustments of the tackle were made at the proper intervals throughout the refining process. But, this test does not take into consideration whether the tackle is dull or sharp, whether the water is warm or cold or whether it is acid or alkaline. Another universally used instrument is the slowness or as it is sometimes called, freeness tester. There are various designs of this machine but in general it depends on the flow of water through a film of the fiber, the principle being that the more highly refined the stock the slower the water will flow through this fiber film. But again this test is dependent on the three phases of the refining process and does not always indicate in just what proportions these phases exist.

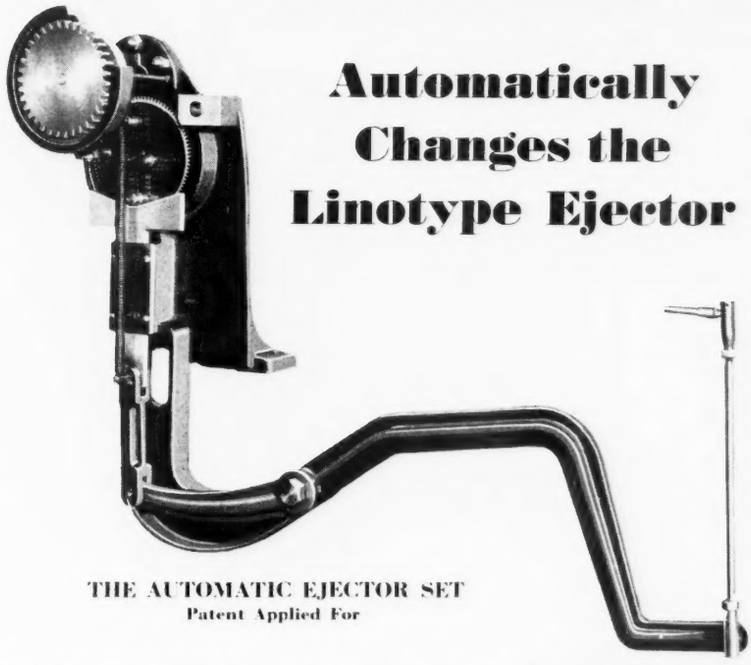
OTHER TESTING METHODS

Among other methods of checking is the constant rise of temperature due to friction; the resistance of stock as it flows through an aperture or by an obstacle; the amount of water which will remain in the stock when subjected to a given pressure for a given length of time and by microscopic examination. No one of these methods tells the whole story but by constantly using all of them together with others of

(Continued on page 34)

*President, Wood Flong Corporation.

Announcing
The Automatic Ejector Set



THE AUTOMATIC EJECTOR SET
Patent Applied For

Automatically Changes the Linotype Ejector

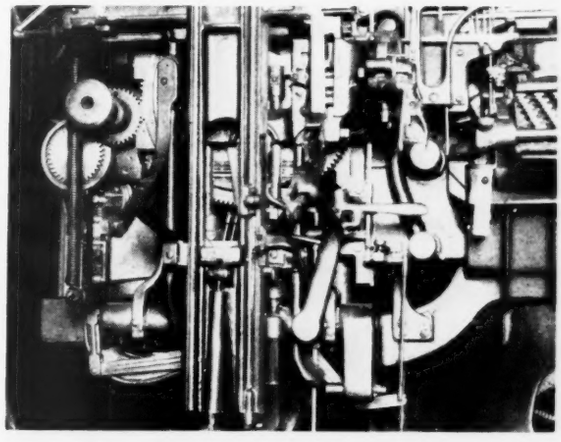
Saves Time—
Saves Money—
Saves Damage to Your Equipment—
Saves Loss of Production—
Saves on your Parts Bills—
Saves one operation in changing machine.
Increases efficiency of your Linotypes.

The Automatic Ejector Set is a neat and compact mechanism for application to your Linotype machines and will more than pay a return on the investment within a short time.

The Automatic Ejector Set does not complicate or interfere with the normal operation of the Linotype in any manner whatever. When not actually in use at the time the operator turns the mold disk from one mold to another, it is an idle attachment. The frame is heavily constructed so as to fully protect the working parts from damage of any kind.

The Automatic Ejector Set is easily applied to any Linotype as there are no holes to drill, no tapping for screws, no blue print to work from. It is attached between the mold gear arm and the machine base to the left of the mold disk. It can be applied by any linotype machinist or operator in a half-hour's time.

The Automatic Ejector Set was originated by a line-composing engineer of experience and designed by a mechanical engineer of note.



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For literature and further particulars concerning the Automatic Ejector Set, clip this coupon.

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The Time Saving Device Co., Inc.
599 Kenmore Ave., S. E.
WARREN, OHIO

Latest Printing Equipment Mechanisms

Seybold Cutter with Lay-up Table

The Harris-Seybold-Potter Co., Seybold Machine Company Division, Dayton, Ohio, have announced a new piece of equipment in the way of an 84-inch Seybold Paper Cutter with Lay-up Table. This equipment can be used in large lithographing and printing plants for cutting quantities of large printed sheets with repetitive printing thereon, as well as paper mills which must lay up large piles of stock to be trimmed and split.

As will be seen from the illustration, after the stock has been laid up on the auxiliary table against the pusher gauge, it is automatically transferred by power from the lay-up table to the main table of the machine. Here the pile of stock is picked up by the main table back gauge and carried forward under the knife. The last movement of the stock to be trimmed is, of course, at right angles to the movement which carried the stock from the lay-up table to the main table.

Loading the machine on the auxiliary table without any interference from the knife bar or the clamp bar is one of the greatest advantages obtained by this new lay-up table.

The back gauge against which the stock is laid up on the lay-up table is rigidly attached to the table so that it will take without the least damage the heaviest jogging blows that the jogging of the stock may require.

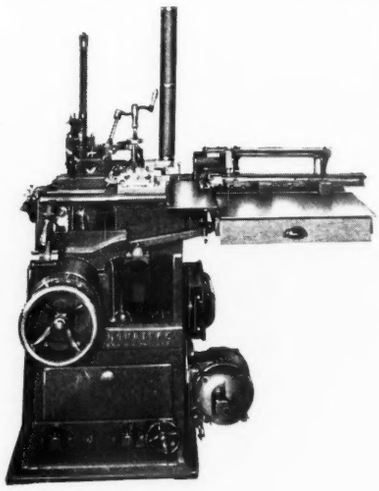
The power back gauge of the main table and the pusher gauge on the lay-up table are both operated by the simple push-button controls.

The jogging gauge may be bolted to the extreme rear edge of the lay-up table so that the lifts may be handled from the front side of the lay-up table or the jogging gauge may be placed on the front edge of the lay-up table and the paper lifted on from the rear edge. When piles are handled which are smaller than are general to jog against the jogging gauge if bolted on the edge of the table, the top of the lay-up table is drilled so the jogging gauge may be bolted within shorter reach.

The pusher gauge on the lay-up table cannot be operated until the back gauge on the main table is in its rear position. That is automatically taken care of by a circuit breaker, which prevents any possibility of accidents. When the operator has finished cutting up one pile, without changing his position in front of the machine, he touches the button and the pile which has been jogged on the lay-up table is pushed across to the main table of the machine. The pusher gauge is set to come one-half inch inside of the right hand side gauge of the machine. In that position the back gauge will not interfere with it.

Monotype Junior Material Maker

With the general adoption of non-distribution of rules, leads and slugs by practically every job and commercial printing plant and newspaper of any size, has come a demand for a strip-casting machine of sufficient range to cover the sizes of strip material most generally used —from 2 to 12 point. The demand is for a machine which can be purchased at a price low enough to make it a profitable investment for even a very small plant.

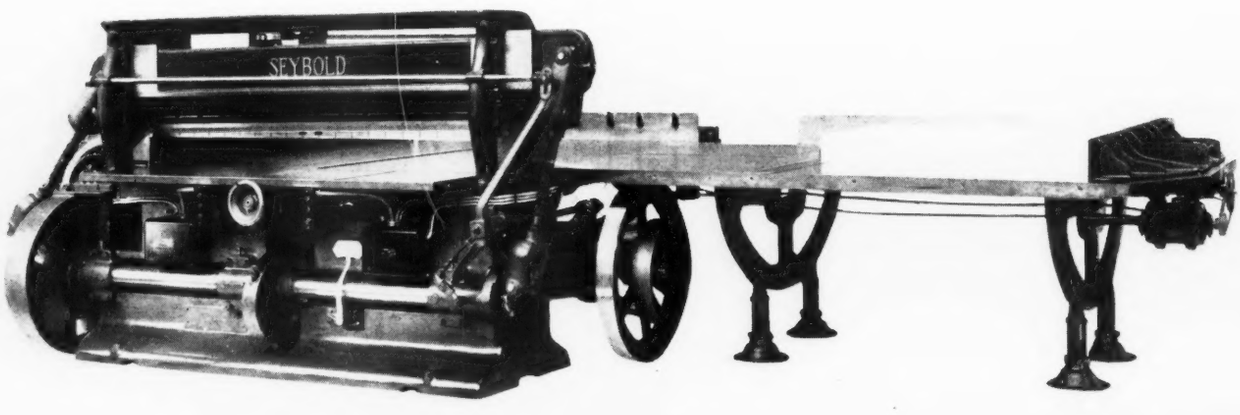


The new Monotype Junior Material Maker is substantially built and of sturdy construction, easy to operate, and casts all sizes of rules, leads and slugs from 2 to 12 point.

The design of the Monotype Junior Material Maker is based upon the same principles of mechanics and operation of other Monotype strip-casting machines. The casting range of the Monotype Junior Material Maker is from 2 point through all intermediate sizes up to and including 12 point. This includes strip leads, slugs and straight-line rules. The standard mold equipment casts "low" leads and slugs of .763 inch height, "high" leads and slugs of .888 inch height, and type-high rules .918 inch. Molds can be furnished for casting spacing and cut-mounting material of any other height under .853 inch.

The machine is equipped with a special large pot, holding approximately 90 pounds of metal. The standard heat equipment is gas, but electric pot equipment can be supplied if desired.

More than two hundred straight-line rule designs from hair-line to 12-point full face are available. The machine is equipped with a new high-speed device by means of which the casting speed can be adjusted to make the exact number of casts per minute which will attain the best results in making various sizes of material. The product comes from the machine in strips 24 inches long (longer if desired), or automatically delivered, cut and stacked, in any length from 6



Save Time and Money and Improve Quality of Your Product With

Vapo Systems Equipment

Control of the moisture content of paper in press room or bindery, or in manufacturing process, has proved baffling and costly to publisher, printer and manufacturer. It has resulted in fatal delay and shameful waste.

Now, as a result of scientific research, a small device has been developed by Vapo Systems, Inc., by means of which, through the use of cold water and compressed air, any desired amount of moisture may be maintained in the paper during the time of its use.

In printing, higher press speeds are made possible, static is eliminated, paper breaks, flying ink and paper dust are reduced to a minimum, and substantial savings in ink, paper and time are effected. To the manufacturer there are many economic advantages, depending upon the character of his business.

First year's savings will practically offset the installation expense, and maintenance cost is inconsequential. Operation is wholly automatic.

We shall be pleased to explain in detail the economic value of this equipment to you.

Vapo Systems Incorporated

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Certified

In Fact As Well As By Name . . .

"Certified" on dry mats has become synonymous with "Satisfied" in hundreds of newspaper plants throughout the United States and Canada.

■

We stand squarely in back of each and every mat without question or quibble. While we've made and sold millions of Certifieds, the instances in which we have been called upon to make good are mighty few.

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While we don't claim perfection for Certifieds, we do present them to you as honest-to-goodness dry mats that will live up to your every expectation.

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Certifieds will enable you to produce good printing plates day in and day out. And we're constantly striving to make Certifieds better.

■

We respectfully suggest that you try a case of Certifieds in your own foundry, under your own working conditions.

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We feel confident that their fine working qualities and superior printing results will appeal to you as they do to so many of your fellow publishers.

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Forget Price! Use Quality at the right price! It pays!

CERTIFIED DRY MAT CORPORATION

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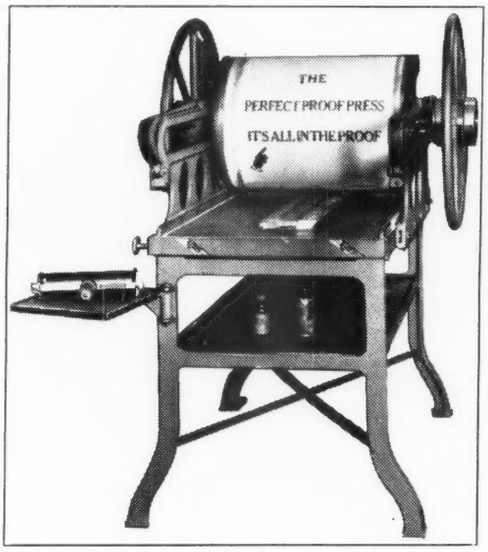
For dependable stereotyping— use Certified Dry Mats

Made in U. S. A.

picas to 24 inches. The over-all measurement of the Junior Material Maker is 55 by 32 inches, the base on which it rests being 20 by 27 inches.

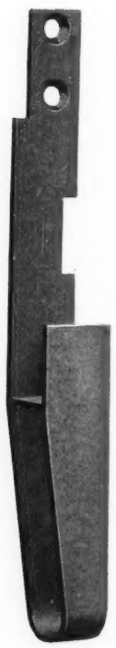
The "Perfect Proof Press"

The Kennedy & Bowden Machine Company, of Nashville, Tenn., built a proof press designed by C. L. Waterston of the Nashville *Banner*. This press is manufactured especially for use in newspaper composing rooms. It is claimed the press is time-saving because its operator can pull a proof without



taking a step; labor-saving because one-half revolution of the cylinder will print a full-length galley, and the press is paper saving because a roll of paper is always at instant command—just cut off enough paper upon which the proof has been printed. The press is hand-operated and its designer claims it will provide low cost quality proofs.

Speed Up Spaceband Transfer



The new, improved Linotype Elevator Transfer Slide Finger accelerates the action of spaceband transfer in two ways: the angled left edge prevents any possibility of interference with the first elevator jaw, while the increased length of the finger extends below the center of the spaceband and holds it upright while the transfer is made.

With the new finger one or two spacebands can be transferred as smoothly as a dozen or more. The supporting brace prevents the finger from spreading and insures long service.

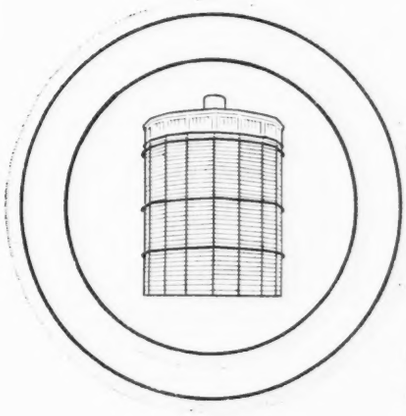
This new finger is applicable to any Linotype.

Camrite Super-Cushion Cam Roller

The Camrite super-cushion cam roller for use in Linotype and Intertype keyboards embodies an entirely new mechanical principle which rests on a structure unlike that of any other roller. The diameter is slightly larger than that of the ordinary keyboard roller. The working surface is divided into a series of parallel cushions, regularly alternating around the circumference in number and measure, one wide and three narrow. These cushions are not corrugations in the ordinary sense of the word. They are true arcs of the circumference, accurately divided by radii from the roller center. The grooves between them are of an equally exact and carefully calculated depth. It is claimed by the manufacturer that the slight increase in diameter is not sufficient to interfere with proper clearance

Gas

FOR HEAT WHEREVER HEAT IS NEEDED



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Just Consider What Wood Service Will Mean To You

WHEN you find yourself up against some really tough problem, you can call upon Wood Service men with the assurance that they like to tackle difficulties.

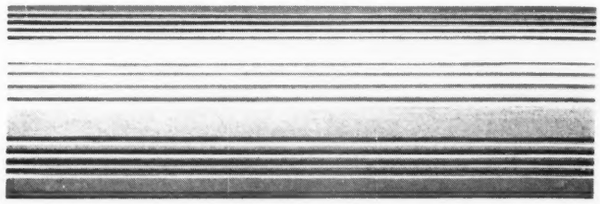
Wood Service men are confident of successful solutions to your problems, because they are backed by the Wood research laboratory. Behind all this stands a firm of nationally known chemical engineers employed by Wood to dig to the bottom at any cost—all for the cause of better casts for better printed newspapers.

WOOD DRY MATS
ALWAYS UNIFORM

WOOD
FLONG CORPORATION
HOOSICK FALLS, N.Y.

between the cam stop pin and the pin in the cam, when the cam yoke is released by the trigger.

The cams start turning instantly on dropping to the keyboard cam roller, and the timing of the matrices synchronizes with the manipulation of the keyboard. Any possibility of delay is completely eliminated by the positive gripping surface. The high resiliency of the rubber compound and the



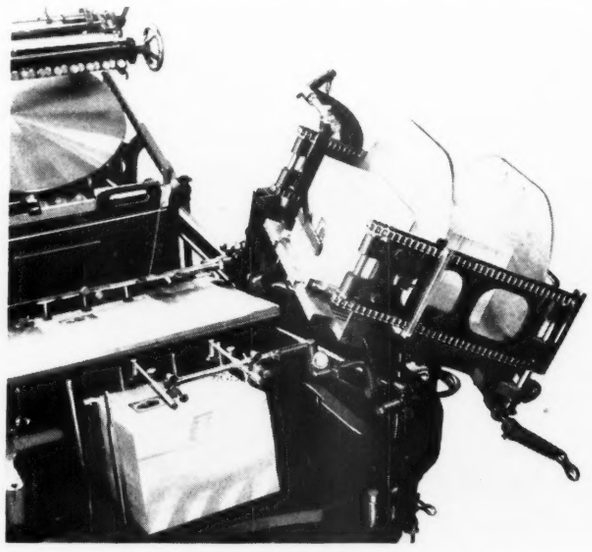
unique mechanical design—a series of circumferential cushions—allows the cam, as it completes its cycle, to become imbedded in the surface of the roll, ensuring maximum driving power, positive action, and long wear.

The cams turn instantly even after the roller has been in use a long time and the surface rubber has become oxidized. The parallel ribs with their arcuate tops give a long-wearing surface in comparison with the old-style corrugated roller having sharp fins which rut so easily from contact with the teeth of the cams. The wider arcuate ribs, according to the Stowe & Woodward Co., Newton Upper Falls, Mass., ensure long-wearing surface—i. e., they take up the strain, while the narrow arcuate ribs give a positive traction area.

New Continuous Feed Table

Printers whose shops handle long runs will appreciate the new continuous feed table recently announced by The Chandler & Price Company, Cleveland, Ohio, for use with its well-known 14½"x22" Craftsman Automatic Press.

With this new device, an operator can run the press without loss of any impressions or, at the most, one or two impres-



sions during each reloading. It is of special benefit in feeding the heavier stocks such as cardboard, cartons and book covers.

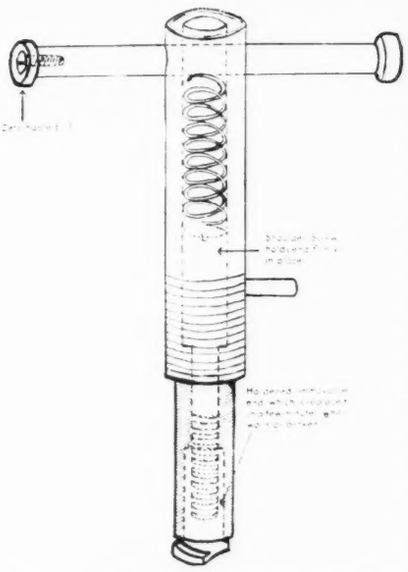
The device has been made up so that it is interchangeable with the standard feed table. Briefly, the sequence of operation is as follows: A wooden pusher is placed in front of two corresponding angles which connect a top and bottom chain on each side of the table. The pusher is moved forward by the usual driving mechanism so that the front of the stack is kept in the feeding position.

While this is going on, a second wooden pusher is placed in front of stationary rods stretched across the back of the

table. Stock is placed in front of this board up to the back of the first wooden pusher. The second board remains stationary until a pair of chain connecting angles comes up from the back. Then the board and stock are moved forward in time with the regular driving mechanism.

When the first board has advanced forward to the position where all, or practically all the stock, has been fed through the press, the board is withdrawn manually and the stock in front of the second board is advanced to the feeding position. This advance is accomplished through a direct drive mechanism controlled by the crank shown in the lower right hand corner of the table. The board withdrawn is then placed against the stationary rods across the back of the table and the loading operation continues.

New Style Vise Locking Handle



The Linotype Parts Corporation, 270 LaFayette St., New York, N. Y., is offering to Linotype and Intertype users a new type of vise locking handle, which has a replaceable eccentric locking tip. This new device is intended to eliminate the process of cutting back and rethreading a handle, the tip of which has been broken. When the locking lip breaks off, a new hardened lip can be applied in a few minutes' time. The body of the handle is bored throughout its length. Into the shouldered recess at one end is placed the hardened locking lip and a hardened steel shoulder screw inserted from the other end of the handle body screws into and firmly holds the locking lip in place. Spare tips, supplied by the Linotype Parts Corporation, can be kept on hand for repair purposes.

New Model Rockaway Spaceband Cleaner

The New Model Rockaway Spaceband Cleaner is employed to polish Lintoype and Intertype spacebands automatically, and has several features incorporated in its design, greatly improving the machine and making it trouble-free. These improvements are as follows:

A square plunger housing bolted to two feed bars gives absolute rigidity; a spring in the plunger housing exerts 15

lbs. pressure upon the spacebands, instead of 7 lbs. as formerly, so as to give a more thorough and uniform cleaning over the entire spaceband surface; the brass guide, which had a tendency to become worn and undercut, has been eliminated; a rigid safety device prevents spacebands wedging

Gummed Packing Felts

All Gauges in Sheets
18″ x 28″ or

Cut Strips Ready to Use

Any Width—Packed in Cartons

No Charge for Cutting

Plain Packing Felt
in
Rolls 12″ x 36″
Sheets 18″ x 28″
Cut Strips

Superior Cork Blankets

Superior Tail Boards

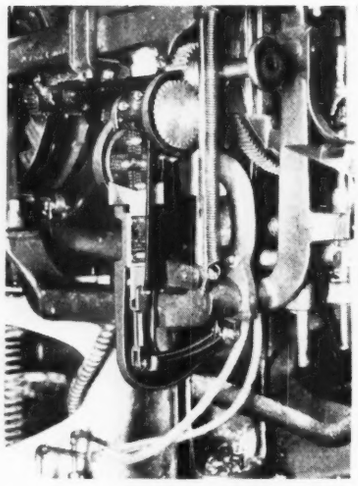
American Publishers' Supply Company

P. O. Box 131, West Lynn, Mass.

under the guide finger, even if the band is inserted sleeve-side up; the stacking box is so made that each spaceband is properly assembled (sleeve down) into the box ready to be returned to the machine.

The Rockaway Automatic Spaceband Cleaner will polish a set of 30 spacebands in one minute. The machine encourages regular spaceband polishing by eliminating the drudgery accompanying this task when done by hand. In addition to this, a considerable saving in time is effected over the hand method of polishing spacebands.

Automatic Ejector Set



When changing from one mold to another on a Linotype two separate operations are involved. If the mold is changed, the ejector blade must also be changed to correspond to the length of line to be ejected from the mold. The operator in concentrating upon the composition at hand, frequently neglects to make the ejector change. When he has changed from a long-measure mold to a shorter one, the forgotten ejector blade will strike the liner and ruin it. This not only makes the liner unfit for use, but frequently damages adjacent machine parts according to the severity of the impact of the ejector against the slug and mold. Trimming knives may be either nicked or pushed out of adjustment; the ejector blade may be damaged; the strain upon the mold parts may cause the cap posts to spring, thereby destroying the casting lockup, and cases have been reported where vise locking handle eccentrics have been broken off. Accidents of this kind not only require costly machine parts replacement, but by far the most expensive item is the stoppage of production while the machine is being repaired.

Investigation shows that fully 90 per cent of the damage done to liners by ejector blades occurs immediately after the operator has swung the mold disk from one to another of the four molds in the disk.

The Time Saving Device Co., 599 Kenmore Ave. S. E., Warren, Ohio, is making announcement of a new mechanism for application to Linotype machines, which is called the Automatic Ejector Set, which automatically selects the proper length ejector blade when the operator turns the mold disk for a change from one mold to another. Operation of the Automatic Ejector Set is extremely simple. When the operator pulls the mold disk driving pinion outwardly the pinion teeth also engage a gear at the left in the frame of the Ejector Set housing. This gear, through a 4-to-1 reduction pinion, operates a small master or index plate which turns in unison with the mold disk. One of four roller studs in the face of the master plate is always in engagement with a spring plunger pivotally connected to the ejector blade setting lever. The ejector blade setting lever, pivoted at a 2-to-1 ratio, extends back of the lower portion of the vise frame and through a universal link makes connection with the ejector blade controller lever. As the master plate revolves, the plunger is caused to operate the ejector blade controller lever through spring tension. The lever in turn automatically selects the proper length blade for use with any one of the four molds in the mold disk.

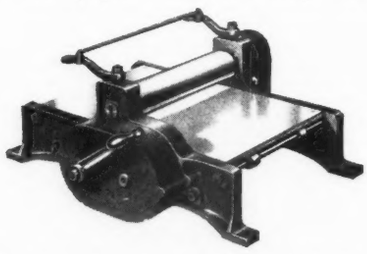
There are 54 indexed holes in the face of the master plate, into which the four roller studs are fitted—one stud for each mold in the disk, thus providing a means of protecting the liners for any possible measure within the casting range of the machine. By a simple twist the roller stud is changed to the index hole corresponding to the length of slug to be cast when a liner change is made in any one of the four molds.

It is claimed that the Automatic Ejector Set does not complicate or interfere with the normal operation of the machine in any way.

At present, The Time Saving Device Co. is making the Automatic Ejector Set for application to Linotypes only.

Reliable Mat Molding Press—Model "A"

The Printers' Mat Paper Supply Company, 559 West Lake Street, Chicago, Ill., is putting on the market a new Model "A" Reliable Dry Mat Molding Press. This equipment is designed for use by publishers, job shops and advertising



agencies. The manufacturers claim that it is the means of reducing costs and at the same time abolishing what has been considered a necessary evil—the standing form.

The Model "A" weighs 280 pounds and has a traveling bed plate measurng 15½"x24". The power is obtained through a series of gears so that the energy required to operate it is reduced to a minimum.

As on Wings!!

Rolls the Table of the *DeLuxe* "DO-MORE" SAW-TRIMMER

Another CREATION by RICHARDS

Replace Your Old Saw With This New Mechanical Marvel

Why push a "Stone Boat" in this age of "Wings"

LIFE TIME FEATURES

ROLLING TABLE— Speed With Ease
DIRECT MOTOR DRIVE— No Belts
DIRT PROOF SPEED GAUGES—1 to 90 Picas
SPLIT FINGER— For Short Miters
INSTANT SAW CONTROL—No Cranking
BULLDOG CLAMP— Speed and Safety
NEW HARD SAW— No More Filing
GREASE SEAL BALL BEARINGS
50-LB. CHIP BUCKET BUILT-IN

If you must use your old saw, let us equip it with new Bulldog Clamp and Dirt-Proof Speed Gauges.

POWER, SPEED ACCURACY

Get Your Order in Early to—

Direct to You from Kalamazoo

J. A. RICHARDS, The Sawmaker

Announcement of Exposition

As announced in the August ENGINEER, the annual convention of the International Association of Electrotypers will be held at Hotel Cleveland, Cleveland, Ohio, Sept. 23-25. This convention will attract members of the industry from all parts of the United States and Canada. A feature of the convention will be an exhibit by the various manufacturers related to the electrotyping industry. This will be the first time an exhibit has been held in connection with the convention.

New Catalogs, Books and Bulletins

Readers of PRINTING EQUIPMENT ENGINEER who are interested in securing any of the catalogs, books or bulletins listed below can do so by checking the literature desired. Mark carefully only that literature which you wish to receive . Fill out the coupon, tear out the page and send it to us. The literature will be forwarded without cost.

Quality Strip Materials at Lowest Possible Cost—A broadside printed in green and black ink on white stock, amply illustrated, describing the New Elrod Model E strip caster. An indexed chart shows the various features of this machine and a cross-section diagram reveals the mysteries of the casting mechanism. Specimens of the rule faces which may be cast are shown. A row of diagrams in cross-section shows the various types of strip material available through the use of this caster.

Vogue Extra Bold—A four-page circular, announcing Vogue Extra Bold and Vogue Extra Bold Oblique, companion faces to Vogue and Vogue Bold. Specimens set in different sizes of the Vogue family are given.

Reduce Make-Ready Cost—A folded and illustrated broadside done in one color and black, demonstrating the use of and the effects to be obtained from Marzio Overlay. Two specimen pictures tipped on the sheet for contrast purposes demonstrate the work which can be done by the use of Marzio Overlay.

Printing Equipment Engineer,
1370 Ontario St., Cleveland, Ohio.
Gentlemen:

Please send the literature checked above without obligation.

Name of Company .....

Attention of .....

Address .....

City ..... State .....

Printing Equipment Engineer requests its readers in answering advertisements to say "As advertised in Printing Equipment Engineer"

THE Burgess Chrome Mat has become so extensively used that the C. F. Burgess Laboratories, Inc., have felt compelled to organize a manufacturing and merchandising company to give its undivided attention to this product.

This company has been organized under the name of Burgess Cellulose Company, with offices and factory located at Freeport, Illinois.

With all operations concentrated at Freeport, Illinois, a central location, it enables us to give the best of service all over the United States and Canada.

The Burgess Chrome Stereotype Mat has now become so well known, for its superior quality, that over a third of the newspaper plants in the United States and Canada are improving the appearance of their publications with it—and a steadily increased number enroll monthly as satisfied customers.

If you are among those who have not as yet used Burgess Chrome Mats, you owe it to yourself to give them a thorough trial.

Our representatives are ready and willing to demonstrate their superiority in a back to back test.

Write for samples, being sure to mention type of casting box used and shrinkage desired, so that the right mat, properly conditioned, may be forwarded.

BURGESS CELLULOSE COMPANY
Division of C. F. Burgess Laboratories, Inc.
Freeport, Illinois

HEY JOHN

"Send this Metal Sample to Imperial!"

"I DON'T KNOW what I would do if I could not have my metal analyzed periodically. Ever since I have been using Imperial I have been sending samples for analysis, and as a result my metal has been in perfect balance since I started using Imperial. This means I have a minimum of dross, less fuel consumption, and freedom from machine and metal troubles. This regular metal analysis is one of the features that I like best about Imperial. That is the reason why I

stick to

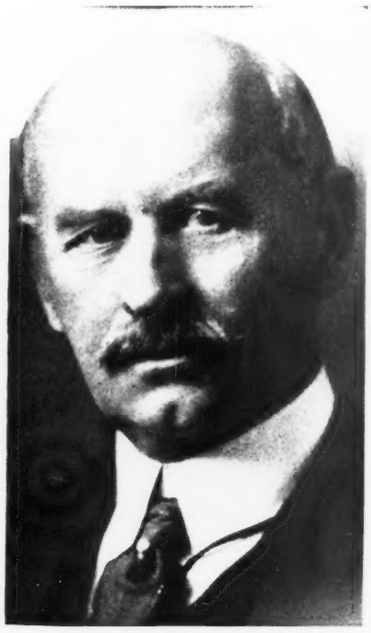
Imperial METAL

THE IMPERIAL TYPE METAL CO.
Philadelphia · New York · Chicago · Los Angeles

Philip T. Dodge Passes On

Philip Tell Dodge, eighty, who had been president of the Mergenthaler Linotype Company for thirty-seven years, until 1928, when he was succeeded by his son, Norman Dodge, died Sunday, August 9, of bronchial pneumonia at his home in Rye, N. Y.

Funeral services were held at the home in Rye, Tuesday, August 11, and burial was in Schenectady, N. Y.



Mr. Dodge was born in July, 1851, at Fond du Lac, Wis. His father was a patent attorney, and when Philip Dodge was still young the family moved to Washington, D. C. Here the young man worked in his father's law office in the daytime and studied law at night school. In 1873 he received his degree in law at what is now George Washington University.

He was admitted to the bar and began practice as a patent lawyer, pleading cases before the United States Supreme Court. Before entering this work he had experimented with numerous inventions of his own. He became patent attorney for the Remington Arms Company and filed application for various patents in the development of the typewriter. Having been an inventor himself, Mr. Dodge fitted into this work and was able to see the advantages to be gained through improvements in the various mechanical devices with which he came in contact.

In 1891 he moved to New York and became head of the Mergenthaler Linotype Company, which position he held continuously until he retired from all active business in 1928. Profiting by his experience with his inventions and as a patent attorney, he immediately set about improving the Linotype.

For several years Mr. Dodge was president and chairman of the board of directors of the International Paper Company, and he had headed the Columbia Graphophone Company, Indian River Company, the Royal Typewriter Company and various other companies. He also had been a director of the Bank of New York and Trust Company and a trustee of the American Surety Company.

First American Typefounding Effort

The first American to make a systematic effort to cast types was Abel Buell, a silversmith of Killingworth, Conn. Buell's first font, which was crude in execution and design, was produced in 1769.—*The Linotype News.*

Baskerville's "Wove" Paper Mold

John Baskerville devised a mold, in 1750, to produce "wove" paper. Prior to the middle eighteenth century all paper was of the "laid" type, showing vertical wire marks when held to the light.—*The Linotype News.*

Books Received

PRINTING EQUIPMENT ENGINEER has received a copy of the Year Book of the London School of Printing and Kindred Trades, through the courtesy of Principal J. R. Riddell, who is also advisory member of the school's advisory council. In size the book is approximately 8¾x11½ inches and has 183 numbered pages.

Just how to adequately approach the subject for review is a perplexing problem. However, appreciative comments will be made on this *fine* piece of work.

An idea of the magnitude of the London School of Printing may be obtained when it is stated that some 3000 students go there to learn the secrets of printing. Besides the 38 members of the advisory council, there are listed 47 instructors on the staff, in the typographical, letterpress, lithographic, bookbinding, foundry, art and science and the administration departments.

It is apparent that recognition is going to be given by school to the work of the British Printing Industry Research association, an organization founded last November (1930). A small section of the Year Book composed in 18-point Granjon is devoted to a description of the association's aims and purposes. The association has issued two memoranda dealing with "The Durability of Paper" and "The Rapid Deposition of Copper-electro Shells." Inquiries have also been received upon a variety of subjects. Many paper problems have been submitted and adhesives have claimed a good deal of attention. Questions on new processes, modern machinery, air-conditioning and humidity are among those already dealt with; ever-recurring troubles caused by inks, and the warping of boards in the bookbinding industry have received attention, while the comparatively new "baby" of the trade (photogravure) is a fruitful subject of investigation.

We hope that somehow, some way, an intimate and understanding connection between the Printing Industry Research association and the London School of Printing will be encouraged, so that proprietors, managers, superintendents and executives from among future students, as well as those who have already graduated, will be enabled to work more intelligently, more scientifically and exactly. The spirit of this is suggested by the caption on the flyleaf of Mr. Hewett's contribution, "Printers and Science," which is: "No man goes so far as the man who knows where he is going."

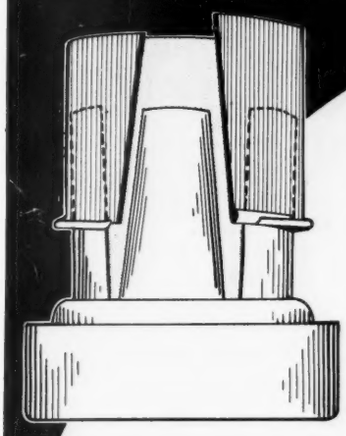
The sections devoted to mechanical composition on the monotype and linotype, the section showing hand-set advertisements and commercial work, as well as the typography of the whole book demonstrate the craftsman-like instruction available in this school. Most of the text matter is machine-set, the section under "Notable Speeches," being set in 11-point Modern No. 11 series. The bulk of the text matter under the title of "Craft Lectures," was linotype-composed in 14-point Granjon, with side references printed in text.

In the pictorial section devoted to letterpress work, "Drops of Water," by Willy Zielke, is perhaps the most realistic bit of halftone reproductive work. This is the opinion of several printers of ability who have examined the Year Book. The page printed in "Mattopake" ink is modernistic enough and should satisfy those who have a leaning toward striking color effects. In the lithographic section, "Owd Brett" from the original etching by H. W. Simpson, and reproduced by photo-litho-offset students, is a wonderful specimen of the art.

Industrial Control Catalog

A new catalog on industrial control has been published by The General Electric Co., Schenectady, N. Y. Information on representative lines of industrial control manufactured by the company are contained within its 196 pages.

ONEIDA CHUCK



. . . . *Here is how it cuts your costs!*

It protects the ¼" to ½" of paper on the inside of your rolls that is frequently damaged and wasted by conical or wedge shaped chucks. Oneida Chucks save many times their cost in a month's run.

Write for Our Circular "E"

● Tell us diameter of your arbor and inside of paper core or roll for specific information. No obligation.

● No iron or heavy metal-tipped cores are needed. Time and expense for preparing and returning cores is saved. Inexpensive non-returnable cores can be used. Equally good on rolls without cores. Oneida Chucks eliminate the "core account."

JOHN WALDRON CORP.

Makers of Converting Machines Since 1827

Main Office and Works NEW BRUNSWICK, N. J.

Why you should use a

Rockaway Spaceband Cleaner

Hand spaceband cleaning is slow, dirty and expensive. Get a ROCKAWAY SPACEBAND CLEANER. It cleans, polishes and graphites 30 bands per minute — lengthens life of spacebands and matrices — trues sleeve of band so that a perfect lockup of matrices is obtained — prevents crushing of matrix walls from adherent metal — aids in producing better printing — pays for itself in one year. Used by hundreds of American newspapers. Replace old models with this new Cleaner.

Write for complete information and latest prices.

THE ROCKAWAY COMPANY

5409 Vliet Street Milwaukee, Wis.

THE BEARD-SHOT
METALFEED
SYSTEM

SAVES Time Metal Heat

Automatically converts used type-casting material into "shot."

Automatically feeds it *under exact control* to the linotype or other typecasting machine.

EQUIPMENT PAYS FOR ITSELF
OUT OF ITS OWN SAVINGS
THIRTY DAYS FREE TRIAL GIVEN

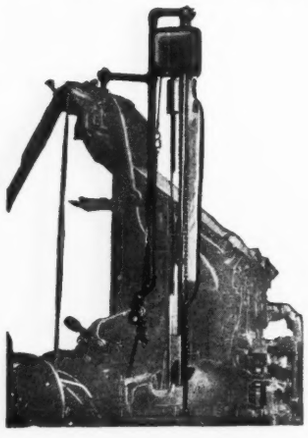
•

Investigate Now!
Save Money on Your Metal Costs

•

BEARD
AUTOMATIC METALFEED CO.
OLYMPIA, WASHINGTON

THE MARGACH
Automatic Metal Feeders
for



Linotype
Intertype
Monotype
Ludlow
Elrod

No other article in the Printing Industry can answer its purpose more effectively than the Margach Feeder, which not only sells for the moderate price of $75.00, but its life of 100% efficiency is guaranteed for ten years—and will undoubtedly last indefinitely, 10,000 users can testify to this. Among our sales representatives are the Mergenthaler Linotype Co., Intertype Corporation, Lanston Monotype Co., and the Ludlow Typograph Co.

MARGACH MFG. CO., INC.
HERMAN DIAMOND, President
213 CENTRE STREET NEW YORK CITY

Vital Elements In Plant Planning

(Continued from page 15)

paper trend—or through a false sense of planning economy—or a woeful lack of an adequate understanding of the essential factors of the plant. Versatility in planning should make it possible to so arrange the plan that departments can be enlarged or contracted without throwing the operation of producing a paper out of harmony, the loss of time or an increase of operating expenses. By far the most difficult of accomplishment,

Another example of Newspaper Architecture where the architect has made the plan govern the outside appearance of the structure.

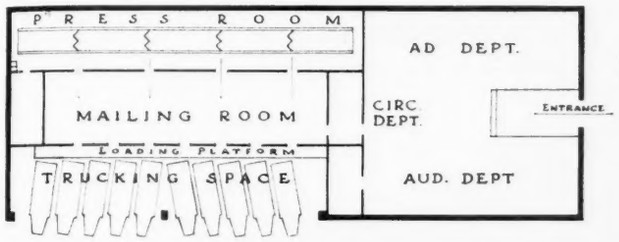
is the element of flexibility and enlargement—the need of not making the plant too large for its present requirements and thereby adding to the initial cost or the danger of slowing up production because departments and equipment are not close together, is important, but most plants have fallen down because expansion for additional facilities has not been provided.

A great deal can be done in a newspaper plant, with machinery and equipment, to properly coordinate and facilitate the handling of the product of one department to the department completing the next stage of the development, but these mechanical conveniences do not excuse the architect from using all his ingenuity and planning skill to accomplish a straight line, compact and well correlated arrangement of the major elements of his plan, depending as little as possible on mechanical conveniences.

Close contact, for a number of years, with the printing industry leads the writer to the definite conclusion that many publishers have made the mistake of not making their building strong enough. The constant urge for speed and still more speed in the production of the daily newspaper has resulted in the introduction of heavier machinery and it is unfortunate when the limitations of the building construction do not allow the placing of a piece of machinery where it should go in the plant.

It would seem unnecessary to mention that the composing room should be close to the news room, that the

various pieces of stereotype equipment should be arranged in proper relation to the make-up area of the composing room; that the stereotype plates reach the press quickly; that the mailing room should adjoin and if possible parallel the pressroom and that the trucking platform should be adjacent to the mail room. It is surprising to note the number of plants where these obvious requirements have been inadequately solved.



In this diagram of a coordinated plan, departments are closely related to allied departments, depending little on mechanical conveniences.

A newspaper plant should be located near to, but not in, the congested financial and shopping district; there should be opportunity for securing adequate natural light, and, of course, a site should be secured and adequate provision should be made for a quick get-away of the delivery trucks. The proper consideration of the health of employees dictates provision for adequate light, ventilation, sanitation and good working conditions throughout a plant where in all its parts, highly specialized work must be accomplished in the minimum amount of time and where no opportunity is recognized for doing a thing twice.

Announces Type Faces

Following the recent announcement of Vogue Extra Bold with Oblique, Intertype Corporation now offers to line composing machine users Baskerville with Italic and Small Caps and Goudy Bold with Goudy Bold Italic.

THIS paragraph is set in the twelve point size of Intertype Baskerville with *Italic* and SMALL CAPITALS. 123456789

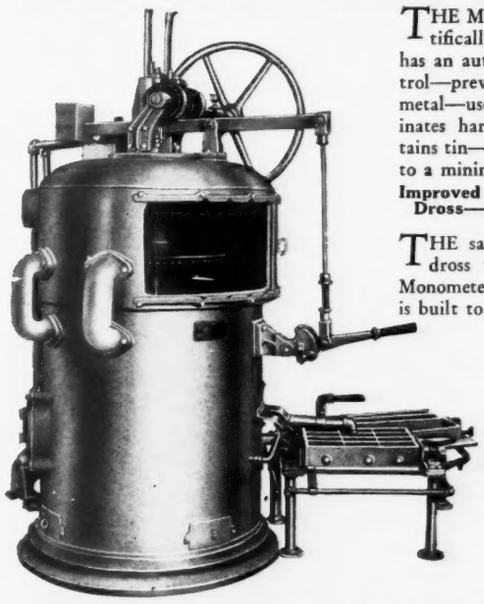
Intertype Baskerville is similar to the original Baskerville type face now so popular in England. This face, brought out last year for Intertype Limited, the English subsidiary of Intertype Corporation, is offered for the first time to typographers of this country.

THIS paragraph is set in 12 Point Intertype Goudy Bold with *Italic*. $123456

Intertype Goudy Bold and its companion face Goudy Bold Italic is a duplicate of the letter orginally designed by and named for America's illustrous designer, Frederick W. Goudy, being manufactured by the American Type Founders Company, by whose permission it is now offered for the first time in matrices for line composing machines.

Goudy Bold with Goudy Bold Italic is being cut in sizes 8 to 14 point, and both will soon be ready in sizes up to 36 point.

Every Newspaper Plant
can profitably install
Monarch Monometer
RE-MELTING FURNACE Operated with Electricity Gas or Oil



THE Monometer is scientifically constructed. It has an automatic heat control—prevents burning of metal—uses less gas—eliminates harmful fumes—retains tin—and reduces dross to a minimum.

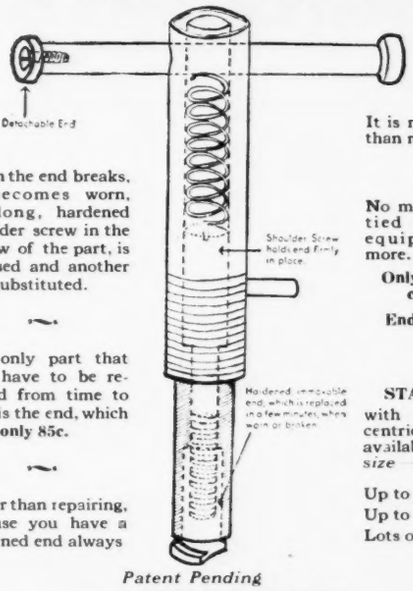
Improved Metal—Reduced Dross—Saving in Fuel

THE saving in fuel and dross will pay cost of Monometer in one year. It is built to last a lifetime.

Write for Catalog P. E. E.

The Monarch Engineering & Mfg. Co.
701-702 American Bldg., Baltimore, Md., U. S. A.
Works, Curtis Bay, Md.

SHOULD LAST A LIFETIME!
. . THE IMPROVED VISE LOCKING SCREW . .


Detachable End
Shoulder Screw holds end firmly in place
Hardened immovable end, which is replaced in a few minutes when worn or broken

When the end breaks, or becomes worn, the long, hardened shoulder screw in the hollow of the part, is released and another end substituted.

The only part that may have to be replaced from time to time is the end, which costs only 85c.

Better than repairing, because you have a hardened end always

It is much cheaper than repairing, too.

No money need be tied up in spare equipment any more.

Only $3.50 each complete.

Ends 85c each.

STAR BANDS with patented eccentric pins, now available in the *new size*

Up to 49---$1.25 ea.
Up to 99---$1.15 ea.
Lots of 100 $1.05 ea.

Patent Pending
Sold Exclusively By
NEW YORK **LINOTYPE PARTS CORPORATION** KANSAS CITY
270 Lafayette Street 314 West 10th Street

LINOTYPE MACHINISTS
We are seeking live wires throughout the country to clean Magazines and Matrices by machine. Lucrative work and protected territory. For further information address
LINOTYPE PARTS CORPORATION
270 Lafayette Street New York City

Send for this New Improved MATRIX CLEANER

PRICE $5 POSTPAID

Pat. No. 1,564,110

Every Linotype and Intertype needs the new improved tubular design Probert Matrix Cleaner. It automatically cleans the reference side of mats, keeping them bright and shiny. Works as type is being set. The longer it is used the better are the results. Entirely automatic. Easy to attach. Fits all makes and models

Circular sent on request

Satisfaction guaranteed. *Sold on thirty-day trial.*

PROBERT TYPESETTING CO.

211 S. Ludlow Street, Dayton, Ohio

KEEP INFORMED

For an impartial analysis or physical examination

Send your [TYPE METAL, PAPER, INKS, GLUES, Etc.] *periodically to*

Mariner & Hoskins. Inc.

222 West Adams Street Chicago. Ill.

Chemists for the Printing Industry

Linotype and Intertype Repair Service

Molds—side knives—back knives—1st elev. back jaws—spacebands—dist. box bars—2nd elev. bars—magazines—motors—dist. screws made like new—driving shafts bushed—general repairing of parts. Also make special Linotype and Intertype tools—Matrix ear file gauge $2.50—magazine expander $4.50—magazine broach $4.50—liner cutting gauge $25.00—fiber motor pinions for all makes of motors and special pinions made to order.

William Reid & Co. **537 S. La Salle St. Chicago · Illinois**

Problems of Dry Mat Manufacture

(Continued from page 20)

our own design, I believe that I am safe in saying that we have approached more nearly perfect laboratory control of refining processes than any other branch of paper making. The delicacy of our product has required it.

IV

The fourth phase of dry mat production, while seemingly very simple in operation, actually involves intricate problems. I refer to the finishing processes, such as mill conditioning and coating or facing.

Coating consists in general of adhesives sometimes with and sometimes without a filler or in some cases a chemical treatment of the surface of the mat. Adhesives as well as the filler may vary throughout the category of chemical classification and the choice is sometimes dependent on the mat for which it is intended.

COATING PROBLEMS

The problems involved in coating consist of the selection of the proper coating material; control of the chemicals and the chemical reactions on the fibers; preservation of the coating compound to prevent souring—this is particularly difficult in the case of mill conditioned mats which may remain stored in a warm climate or warm room for a considerable length of time; the uniform application of the coating; the prevention of scaling off of the filler constituent and the penetration of the mat by the coating compound. Various manufacturers have worked out their own problems in this connection and I believe in almost every case have eliminated at least the most serious difficulties.

THE "WHY" OF MILL CONDITIONING

The mill conditioning process I believe to be one of the most important innovations in dry mat manufacture since the beginning of the industry. It is important for two reasons. It eliminates a very tedious and difficult phase of foundry work. It gives factory standardization and laboratory control to a process which is essentially dependent on uniformity for satisfactory results. It permits the use of expensive and highly developed mechanical equipment that was unavailable to the stereotyper conditioning only a few mats for his own consumption. It more nearly completes the dry mat as a ready-to-use proposition which, after all, is its excuse for existence.

The field of mill conditioning was looked upon as dangerous by the manufacturers for a long time before it was approached. We realized the divergence of opinion among the stereotypers as to the percentage of moisture which a mat should contain and that to attempt to satisfy each individual would become an intricate procedure. Recognizing the importance of pre-conditioning mats, however, and understanding the opportunity for establishing more satisfactory results in general, we the manufacturers, closed our eyes and plunged in. We had our difficulties to begin with, and plenty of them, but we overcame the more serious ones by adopting a policy which we at first thought impractical, if not impossible—that of making a tailored dry mat. Mill conditioned mats at present are in general conditioned on order and for the individual consumer.

FACTORS INFLUENCING SHRINKAGE

In this connection, you know, and I hope you will always remember that the methods of handling and types of equipment, particularly scorchers, as well as the moisture content of the mat, have their influence on shrinkage. The mat manufacturer cannot always know the exact moisture content necessary to give a required shrinkage in a particular foundry. Offices sometimes require as much as 2% variation in moisture for the same shrinkage. I ask you to bear this in mind, because in receiving sample mats of any make, it would be unfair to condemn them because they do not give the exact shrinkage you desire.

INFLUENCE OF CONDITIONED MATS

The second and perhaps the most important influence of conditioned mats on the industry is that it was the first step toward serious cooperation between you and us. It brought us to a realization that you have problems for which, if we take the trouble to understand, we are able to offer some measure of relief.

PLEA FOR COOPERATION

And, in conclusion may I not enter a plea that we extend this cooperation, that we work together with closer harmony for a better understanding of the problems each of the other. If you will try to adjust your conditions with a view of eliminating those requirements which it is impossible for us to meet, we in turn will strive to improve our mats to overcome the problems which you cannot eliminate. Particularly I appeal to you to standardize insofar as possible your foundry procedure so that you will all agree on your dry mat specifications. We have found it extremely difficult to make a few kinds of good dry mats. I fear it is beyond human possibility to make a thousand kinds of good dry mats. If you will standardize your requirements we pledge our unstinted efforts to meet those requirements.

THE quality of the type produced by your machines is controlled directly by the quality of the metal in the machine pot.

Use Blatchford Metal « the product with a reputation for unquestioned quality backed by 75 years of metal mixing experience.

Don't neglect your metal. « Keep it in perfect working condition at all times. » Let us help you do this « use our laboratory service. « We will gladly make a chemical analysis of samples submitted by any printer or publisher and render a complete and impartial report.

GOOD METAL IS ALWAYS MORE ECONOMICAL

E. W. BLATCHFORD COMPANY

blatchford

LINO - MONO - INTER - LUDLOW - TYPE CASTER - STEREOTYPE

METALS

63 Park Row, New York City

608 So. Dearborn St., Chicago

A Sans-Serif Family of Real Distinction

With the completion of Tempo Heavy, the Ludlow Tempo family is now available in four weights and an inline version—which are here shown. It offers to printers as fine a sans-serif family as is to be found, with the added advantage of being in matrix form, ready for use with the most economical known system of job and display composition . . . . With typefaces in matrix form all worries regarding adequacy of type supply are banished forever. . . . And the typeface is always mint-new. . . . Specimen showings will be gladly sent you upon request—without obligation.

LUDLOW TYPOGRAPH COMPANY

2032 Clybourn Avenue
Chicago, Illinois

DISTINCT GRACE IS
Evident in the form of
this fine letter design

Ludlow 28-L Tempo Light—8 to 72 Point

MORNING DELIVERY
The daily newspapers
arrive on special train

Ludlow 28-M Tempo Medium—8 to 72 Point

POWER ENOUGH
That demands the
attention of clients

Ludlow 28-B Tempo Bold—8 to 72 Point

STRONG TYPES
Now the mode in
most advertising

Ludlow 28-H Tempo Heavy—12 to 48 Point

INLINE DESIGN
BY LUDLOW IS
USEFUL IN ADS

Ludlow 28-HN Tempo Heavy Inline—18, 24, 30, 36, and 48 Point—Caps Only